

**THE RAILWAY GAZETTE**  
A Journal of Management, Engineering and Operation  
INCORPORATING  
Railway Engineer • TRANSPORT • The Railway News  
The Railway Times • Herapath's Railway Journal • RAILWAY RECORD.  
RAILWAYS • ESTABLISHED 1835 • RAILWAY OFFICIAL GAZETTE

33, TOTHILL STREET, WESTMINSTER, LONDON, S.W.1.  
Telephone : WHitehall 9233 (12 lines) Telegrams : "Trazette Parl, London"

## BRANCH OFFICES

GLASGOW: 87, Union Street . . . . . Central 4646  
NEWCASTLE-ON-TYNE: 21, Mosley Street . . . . . Newcastle-on-Tyne 22239  
MANCHESTER: Century House, St. Peter's Square . . . . . Central 3101  
BIRMINGHAM: 90, Hagley Road, Edgbaston . . . . . Edgbaston 2466  
LEEDS: 70, Albion Street . . . . . Leeds 21714  
BRISTOL: 8, Upper Berkeley Place, Clifton . . . . . Bristol 21930

Annually £4 10s. by post. Single copies, Two shillings.  
Registered at the G.P.O. as a newspaper. Entered as second-class matter in U.S.A.

Vol. 97] FRIDAY, DECEMBER 19, 1952 [No. 25

## CONTENTS

	PAGE
Editorial Notes . . . . .	673
The Transport Bill in Committee . . . . .	675
Advertising Relief Trains . . . . .	676
The Use of Rubber on Railways . . . . .	676
British Transport Commission Traffic Receipts . . . . .	677
Danish State Railways . . . . .	677
Letters to the Editor . . . . .	678
The Scrap Heap . . . . .	679
Overseas Railway Affairs—Rhodesia—New Zealand—Canada—Argentina—France—U.S.S.R.—Norway—Western Germany—Austria . . . . .	680
Publications Received . . . . .	681
Unusual Repair of Bridge Girder . . . . .	682
Power Signalling at Euston, London Midland Region . . . . .	684
New Locomotives for Sudan Railways . . . . .	689
Ultrasonics in the Foundry . . . . .	690
Personal . . . . .	691
Peruvian Corporation Limited . . . . .	693
Locomotive Engineers' Letchworth Visit . . . . .	693
Notes and News . . . . .	697
Railway Stock Market and Table . . . . .	700

## Transport Bill and Railway Executive

**D**URING the committee stage of the Transport Bill in the House of Commons on Monday last, a number of clauses dealing with the future of the railways was discussed. The debate will be considered in detail in a later issue but one point made by the Minister of Transport merits immediate attention. Mr. Lennox-Boyd stated that the British Transport Commission had asked in July last that the Railway Executive should be brought to an end and that this should be done "in advance of the production of the scheme" for which the Bill provides. It is understood that the British Transport Commission request to the Minister was made after consultation with the Chairman and Members of the Railway Executive, the view being that, since it was obviously the Government's firm intention to bring the Railway Executive to an end, and the Transport Bill made specific provision on this point, the sooner the period of uncertainty was concluded the better. Presumably,

however, the Commission's proposals last July were not then acceptable to the Government, and no change in this respect appears to be imminent. As the Bill is now going through Parliament, the Minister will presumably await the scheme which, under the terms of the Bill, the Commission has to present to him in due course. It was made clear during the debate that this scheme will have to conform at least in its principal outlines to the ideas of the Government. Some suggested clauses which would have limited the matters subject to the reorganisation scheme, put forward by the Commission have been rejected by the Minister.

## Meeting of the Institution of Locomotive Engineers

**A** MOST successful meeting of the Institution of Locomotive Engineers, which is reported elsewhere in this issue, was held on December 10, when some 120 members and guests were taken on a conducted tour over the works of K. & L. Steelfounders & Engineers Limited. The departments visited included the research laboratories, and testing departments where finished castings are subjected to X-ray and gamma ray inspection. The melting, moulding and pouring operations together with core-making was also witnessed, the castings included wheel centres, traction motor casings and motion girders for home and overseas railways. The engineering department was also visited, where the members saw in production many types of heavy-duty KL diesel-engine propelled railway shunting and mobile cranes of varying capacity all of which are designed and manufactured at Letchworth; petrol engines are used for lighter capacity cranes. The machine shop was also visited where a variety of machine tools are engaged in proof and rough machining of the many steel castings produced.

## Diesel Sets on British Railways

**I**N pursuance of a policy of using the type of traction likely to be most efficient and economic for a particular duty and at the same time giving the public a flexible and attractive service, British Railways, as we announced in our November 14 issue, are to introduce light two-car diesel sets, in the first instance in the West Riding. It will be possible to operate them in multiple as four-, six- or eight-coach trains. Such two- and four-car multiple-unit formations have long proved their utility on the electrified sections of the Southern Region. As the December issue of *British Railways Magazine* stresses, in commenting on diesel developments on British Railways, an essential for success of such services is intensive user; the network of lines in West Yorkshire yields a variety of routes on which the diesel sets can be adequately used all day and demonstrate their capability in coping with heavy fluctuations in traffic. Financial considerations will preclude for many years large-scale electrification but the use of diesel trains where conditions favour offers an alternative requiring less capital expenditure, yet conferring many of the advantages of electric traction, such as maximum availability, high rate of acceleration and daily mileage, and, not least, cleanliness, no negligible consideration in industrial areas.

## Conveyor Belts for Passenger Transport

**C**OLONEL SIDNEY H. BINGHAM, Chairman of the New York Board of Transportation, believes that the conveyor belt can play an important part in urban passenger transport. A system based on his ideas has been designed by two American firms to replace the Grand Central-Times Square shuttle subway in New York. Passengers would first walk on to a platform moving at 1½ m.p.h. and step thence into a 10-seat car riding on a parallel belt in a continuous stream and at the same rate of speed. As the cars cleared the end of the loading belt they would be accelerated over a bank of rubber-tyre wheels on to the main belt moving at 15 m.p.h. At the other end the reverse procedure would take place. The capacity is estimated at 15,000 seated passengers an hour in each direction. As early as 1904 a moving platform subway was proposed in New York,

under 34th Street, between First and Ninth Avenues. The system then to be used consisted of two "stepping" platforms and one main platform, all moving parallel and supported on wheels of such a diameter that they would move at three, six and nine m.p.h. respectively; the nine m.p.h. platform, wider than the other two, was to have both seats and a walk.

### A Natural Snow Fence

THE Chicago & Illinois Midland line south of Manito is particularly subject to blocking by snowdrifts. In 1930 a 2½-mile slat-type snow fence was erected at a cost of \$1,924 to combat this menace, but as such fences have to be replaced every ten years, it was decided in 1938 to plant a natural snow fence instead of renewing the slat fence. The natural fence consisted of some 13,000 first-year seedlings when planted in five rows six feet apart; the spacing of the trees in each row varied with the species. The cost of planting was \$540, to which sum must be added \$87 for the preliminary preparation of the ground. Maintenance to date has cost \$243, but this was necessary only because one line of trees was planted too near to a high-tension power line and has had to be kept trimmed. The survival of the seedlings was excellent, and despite heavy snowfalls and high winds, there has so far been no snow trouble since the planting. Apart from the lopping, which would not normally be necessary, the initial and recurring costs of the planted fence would, therefore, seem to be only \$627 in 50 years, but the cost of a slat fence of equal length would be \$9,620 at 1930 rates. The natural snow fence might be economical in Scotland and elsewhere.

### New Ticket Selling Methods in U.S.A.

THE Southern Pacific Railroad is to introduce a novel method of selling tickets in an agency which it is opening shortly in Los Angeles. A passenger desiring to buy a ticket or to obtain information will be directed to a comfortable telephone booth, with a seat, instead of to the usual ticket window. On lifting the receiver, he will be connected automatically to a member of the ticket sales staff in another part of the building. On completion of the inquiry, the purchaser will wait in the agency lounge while his tickets are being prepared in a central ticket make-up office, under telephone instruction from the ticket salesman. When the tickets are ready, they will be dispatched by pneumatic tube to the main floor, and the passenger will be "paged" by a public address system and directed to one of five windows at which he will pay the fare and receive the ticket. Clients seeking information will be able to telephone the sales staff directly from their homes, hotels, or offices. Although this system may appear cumbersome to British ideas, it must be remembered that American long-distance tickets are generally more complicated than ours, because of the many railways and coupons that are often required to make up a through ticket, so that rapid over-the-counter sales are not possible except for short journeys.

### Productivity and Incentive

ALTHOUGH the steel founding industry has gone far towards putting into practice the recommendations of its productivity team which visited the U.S.A. three years ago the British Steel Founders' Association believes that the productivity of its member firms can be still further increased. There are some 70 steel founding firms in Great Britain, employing about 25,000 and each producing some 80 tons of castings a week. The human side of the problem of increased production was discussed by the Association at a conference last month and again stressed at a Press conference which it held this week. It was agreed that management should make clear to all ranks its actions and directives and also be more receptive to new ideas. Too often the worker lacked ambition. He was content with a standard of living below that which his greater exertions could bring him. The skilled man was in a better position to improve

his standard than any other member of the community, and he should be encouraged to see that the more he produced the more went into his pockets. There should be no artificial limitations to increased production, and to this end the Association was trying to induce the unions to agree to adult apprenticeships in the steel founding industry.

### Relay Interlocking in Belgium

POWER signalling made its appearance in Belgium in September, 1903, when an all-electric signal box, containing a 100-lever frame, was opened at Antwerp Central Station. Others followed at Charleroi, Brussels, Namur, and many other stations, over 90 installations being at work today. At first the individual lever system was used, and for some time the route-setting principle met with no favour, L. Weissenbruch and J. Verdevyen, then at the head of the Signal Department, being active opponents of it. Eventually, however, newer ideas prevailed and some route-lever boxes were installed, but mechanical interlocking was retained with them. A further step was taken in January of this year with the bringing into service of an all-relay type box at Soignies, on the main Brussels-Paris line through Braine-le-Comte. This is ably described in the current issue of the *Bulletin of the International Railway Congress Association* by M. Devillers, one of the Signal Engineers of the S.N.C.B. Based in principle on a design adopted with success in France, the box replaces four old Saxby mechanical ones, one of which controlled a junction a distance away, where a subsidiary local control panel has been put in for use in emergencies.

### Standardising International Signalling Terms

IT is known that a committee of the International Union of Railways is engaged on drawing up a glossary of signalling terms in agreed languages, to facilitate the accurate interchange of information among specialists in the various countries, something very necessary, since often what is apparently the same word is used quite differently among them. The English version of M. Devillers's article referred to in the preceding note serves to emphasise the importance of this, for parts of it have been rendered obscure by translating too literally, without realising what our practice is. The expression *table d'enclenchements*, for example, does not mean a locking table but a locking box; our locking table is called in France *tableau d'enclenchements*. The verb *contrôler* does not mean to control, as signal engineers here use that word, but to detect or prove, and it is incorrect to call an illuminated diagram, particularly if standing by itself, a "control panel," or to say that a point detector relay "controls" the points. This difficulty, typical of many in railway engineering work, arises from the fact that when the British signal engineer speaks of controlling a signal or pair of points, his French colleague employs the verb *commander* and uses *contrôler* to mean proving that everything is in proper order; hence he calls a point detector a *contrôleur d'aiguille* and a ticket inspector a *contrôleur*.

### Improvements at Euston

IT is now many years since it was realised that the layout and signalling at Euston needed improving, but twice war has intervened to postpone far-reaching plans aimed at completely changing this important London terminus. After the last war, however, the position became such that a certain measure of betterment could no longer be delayed and a less ambitious programme, including a thorough resignalling, as described in this issue, had to be sanctioned. The adoption of electro-pneumatic point mechanisms for the first time at a London main-line terminus gives additional interest to the new work, which includes some special features, such as axle-counting in one platform line and describers designed to meet local conditions. Track circuiting alone would have noticeably improved the operation of the station, but combined with power signalling it cannot fail to speed up the traffic and eliminate difficulties suffered far too long.

### Oil-Burning Locomotives for Sudan Railways

THE goods traffic handled by the Sudan Railways during 1951 exceeded the previous year's figures by approximately 338,760 tons, and difficulty was experienced in coping with the exceptional volume of traffic. With the delivery of the 19 oil-burning locomotives ordered from the North British Locomotive Co. Ltd., which are described and illustrated elsewhere in this issue, the position in regard to motive power on the railway will be eased considerably. The engines are of the 2-8-2 type, and are required for mixed-traffic operating, and to enable the locomotives to operate over the sections laid with lighter rails the tender load will be reduced. The Sudan Railways are carrying out a progressive re-laying programme, and some 21 miles of 50-lb. track south of Khartoum have been re-laid with 75-lb. rails. The locomotive frames are machined from rolled-steel slab, and finished to a thickness of 4 in. The inner firebox is of copper with water space stays of the same material; Laidlaw Drew oil fuel equipment is fitted.

### The Transport Bill in Committee

ANY of our readers who have not had an opportunity to read the official report of the Committee Stage of the Transport Bill, we recommend to obtain a copy of *Hansard* for December 3—the first day. On that day Clauses 1 and 2 were passed under the guillotine procedure. The first amendment to Clause 1, designed to prevent the hurried sale of the road haulage vehicles, was discussed for less than 90 minutes and then, so tight was the timetable, the Opposition itself moved the closure to ensure that some consideration could be given to later amendments. It will be seen from *Hansard* that the whole of the business had to be rushed through to keep within the timetable. We have been studying Parliamentary records for many years, but we have never read a more lamentable account than this. This is the Bill which will revolutionise the transport industry of this country, and at the time of writing it seems certain that it will not receive—in the House of Commons at any rate—the careful detailed attention it should have before it becomes law.

Apart from the issue of *Hansard* we have mentioned, we advise readers to obtain copies of the report of the Transport Tribunal in Northern Ireland on which we commented in our December 5 issue and the report from the Select Committee on Nationalised Industries, both of which have a bearing on the Transport Bill. The first contains, at pp. 55-56 and Appendices VI and VII, observations on the organisation of the Ulster Transport Authority, and they are very apposite to the arguments we have used on British railway organisation in earlier articles. The U.T.A. submitted to the Tribunal a chart of its organisation, which shows it to be well arranged on the principle of part-time board, with management below, headed by a General Manager and the departmental officers reporting to him. A firm of management efficiency specialists employed by the Tribunal reported that the U.T.A. chart "does not accurately define the existing organisation structure because all chief officers, in fact, attend board meetings and answer personally for their departments, and may receive their instructions at that level, which inevitably results in the Authority's spending time on the consideration of functional aspects of executive work instead of functioning as a policy-forming body, leaving executive implementation to the General Manager. Appendix VI shows the real existing organisation, and we agree with Messrs. Urwick Orr & Partners that it is wrong, and we are of opinion that the Authority should adhere to its normal structure as shown in Appendix VII." *Verb. sap.*

The second report contains, at pp. 63-64, some observations by Lord Hurcomb on questions put to him by Lord Hinchingsbrooke on "a hypothetical situation," namely, the decentralisation of the railways with the B.T.C. in some kind of intermediate position, rather like,

as Lord Hinchingsbrooke said, "the Arts Council." Lord Hurcomb replied: "If that is what is wanted, then let the Minister stand the racket and take full responsibility and do what he likes, and Parliament can do what they like to him. But you cannot have it both ways. I think that would raise a very big question as to what sort of people you would get to serve in some intermediate body of this kind, living in a sort of limbo where they had not got real responsibility and yet appeared to have it." Later, on the same point he explained his view a little further:—

"I cannot honestly see how that would work, because the first thing which would be said to the Commission would be: 'Why did you not keep these people in order? They are your people; it is their operations which come into your accounts,' unless the Commission were a sort of judicial body or a hearer of complaints or appeals. If it were really still responsible for the efficiency of the service ultimately and for solvency of the finances, they could not disclaim interest in what their subordinate agencies were doing. However clear-cut the devolution of power was, they would still be held responsible in the ultimate resort."

To return to the Bill itself. On the first day in Committee there was a shrewd interjection by Mr. Boothby that the effect of the disposal of the road haulage vehicles might be to place on the roads a greater volume of traffic than they are capable of carrying. If that happened as a result of the Bill, said Mr. Boothby, a future Government would have to introduce a measure for the control of transport far greater than anything which the House of Commons had passed so far. The Minister said that in Scotland he proposed to set up a committee representative of rail, road, air and steamer services to keep all transport under constant review. Mr. Morrison stated that the T.U.C. and the Unions did not propose to accept the Minister's invitation to be represented on the Road Haulage Disposal Board.

On the second day, the Minister announced that the effect of the Bill would be to leave with the B.T.C. the following goods motor vehicles: heavy haulage, 197; other special services, 1,508; parcels services, 2,132; ordinary load carriers, 841. These would be in addition to the 14,000 vehicles now used by the railways for collection and delivery work. Moreover, the B.T.C. would be able to apply for licences for additional vehicles like everyone else. As the goods motor vehicles to be retained by the B.T.C. may be operated by one or more companies under their direct or indirect control, and as these units are equal (on a present-day basis) to those controlled by the former railway companies, Mr. Sparks asked why they could not again be operated with the collection and delivery vehicles directly under the control of the railways. The Minister replied that there "should be a separate financial basis" but that the B.T.C. might wish to introduce some kind of co-ordinating authority. It does not therefore seem that the railways will have at their disposal or specific control all the road vehicles they had before, other than C. & D. units. It might be said that they haven't them now, but then the future will be different and there will be open competition. It is points like this that make the prospect look so ominous from a commercial point of view.

On the third day, the Minister agreed to extend from three months to six the period within which the B.T.C. will have to apply for licences for its goods motor vehicles; and the Parliamentary Secretary agreed to extend from one month to three the period within which the B.T.C. must lodge applications for passenger road service licences. Neither of these small concessions were matters of principle or importance. Perhaps the most important point dealt with on this day was the Minister's observation on sub-section (5) of Clause 16 which gives the Minister power to compel the B.T.C. to divest itself of that part of its shareholding which gives them control of road passenger undertakings. "It would be quite unrealistic to suggest," said Mr. Lennox-Boyd, "that we should go to the trouble and possible, indeed certain, argument of introducing a clause if the possibility of having used it had not



entered our heads." It is too early to say what the future of the B.T.C.'s road passenger services will be. If a branch railway line is closed today, one of the inducements is the fact that a B.T.C. passenger road service may provide an alternative facility. This may not be possible in the future. The fourth day disposed of Clauses 10 (the levy), 11 (establishment of transport fund), 12 (payments to the B.T.C. for loss of its road haulage), and 13 (provisions for when the levy comes to an end). In a subsequent issue we shall deal with the discussion on the railway clauses of the Bill.

### Advertising Relief Trains

**P**ATRONAGE of relief trains, like reliance on loud-speaker announcements and printed notices, involves questions of public psychology. We drew attention to a lightly loaded relief running ahead of an overburdened main train in our October 24 issue, after which, in our issue of November 28, a correspondent suggested that reliefs might be run after the main portion instead of in front, to take the overflow. All possibilities, naturally, are studied by the operating departments of British Railways, but the balance of experience is that the preceding relief has more chance of being useful. One Region, in fact, considers that running it ahead of the main train is a way of attracting passengers into it. Where the opposite policy is followed, it is held that the combination of the prestige of the parent express and the fact that it goes first combine to increase the difficulty of getting travellers into the following duplicate. This is borne out in practice when timing considerations or platform availability have made a following relief unavoidable, and station staff have had great difficulty in persuading travellers to wait for it. Every effort is made to provide similar amenities in the way of rolling stock and dining facilities, but unfortunately this is not always practicable at busy weekends, availability of restaurant car staff being as much of a problem as the vehicles themselves.

When trains composed of two or more portions have to be divided and run separately, the advertised departure time cannot be set forward for one part, or passengers for the places it served would have a legitimate grievance if they arrived at the station according to timetable and found that there were no through carriages for their destinations because these had gone on ahead. In such circumstances the second portion follows the parent train and special attention is again given to arranging for dining facilities if at all possible. With regard to advertising relief services on posters applying to the main trains, often this would be impracticable because of the varying circumstances that necessitate running reliefs, which cannot be foreseen far ahead. On the other hand there are some regular "Fridays and Saturdays only" trains that are virtually reliefs to well-known services, such as the up "White Rose" of the Eastern Region, and it was such facilities we suggested including on the timetable posters of the parent express when discussing this subject before.

The problem of equalising loadings between main and relief trains perpetually harks back to the countering of human suspiciousness. It is simplifying matters somewhat to maintain that the relief running ahead of its main train will command good patronage because passengers using it will expect to get to their destinations first. Their mental processes, as deduced from listening to their conversations, are more on these lines: "This lightly-filled train so smoothly offered to us by the station staff is undoubtedly a trap designed to relieve them of the embarrassment of our presence. Once safely round the corner and out of sight, we shall be shunted into a siding and there remain while the main portion speeds past us, loaded with wise travellers who refused to be beguiled into this snare. The best that can happen to us is that we shall arrive home half an hour later; the worst (and no less likely) is that on arrival at some junction station further up the line we shall hear that dire imperative, "all change!" These deplorable misgivings spring frequently from experience on daily rush-hour journeys, where something of the kind

must be within the knowledge of all, and few will maintain that delays or out-of-course happenings are always followed as soon as they might be by explanations and advice.

Our proposal that arrival times of reliefs should be announced on loudspeakers has been commented on to the effect that if they covered all the stations served, and were combined with similar information regarding the main train, the effect would be to confuse the public. Ticket inspectors are in possession of all information necessary to help travellers, and loudspeaker announcements are made, although not with all the detail above suggested. Even so, we have to think of the sometimes long walk from the barrier through the subway and emergence on the platform to find a train apparently about to depart but no official in sight to ask whether it is the relief referred to at the barrier. There are travellers in the carriages, but others remain stolidly on the platform. A moment or two of indecision follows in which the relief slips unostentatiously away and another passenger who might be already on his journey is left behind to swell the crowd on the main train. We depict these conditions without implying criticism. The railways know full well the problems confronting them and the practical difficulties in the way of seeing that every relief commands respect and allays suspicion by being formed of modern and uniform types of stock, duly labelled with destination boards. The paper window sticker saying "London" has been seen too often careering towards the Provinces for it to earn universal belief.

### The Use of Rubber on Railways

**A**S a stress carrying material, rubber is being increasingly used in the engineering industry as a whole, and designers are finding that complex mechanical designs can be more easily solved, in many cases more economically by the use of rubber. This feature has been brought about largely by the success achieved in the bonding of rubber to metal on the one hand, and by the use of other techniques whereby rubber is held between metals by means of pre-stretching. Both methods have opened up entirely new fields, and have made possible the use of rubber in hitherto unknown capacities.

In delivering his paper "Recent Developments in the Use of Rubber in Railway Engineering," at the Institution of Locomotive Engineers on Wednesday, December 17, Mr. S. W. Marsh, Associate Member, Chief Engineer, Andre Rubber Co. Ltd., said the discovery of heating rubber with sulphur marked a most important stage in its development as a useful material. A further development of great importance was the discovery of organic accelerators which improved service life and durability. A great improvement in rubber technique took place during 1920-25; plantation rubber of good quality was being increasingly used, and by the incorporation of reinforcing ingredients, such as carbon black, put the subject of reinforcement of rubber on a more scientific basis; without carbon black natural rubber has a tensile strength of some 3,000 lb. per sq. in.; suitably compounded with carbon black the tensile strength is increased to approximately 5,000 lb. per sq. in. Synthetic rubber was first put on the market in the U.S.A. in 1931. Work on synthetics had an unexpected result, and one which has turned out to be of the greatest importance to the application of rubber in engineering. Mineral oils, greases and petrol had an adverse effect on natural rubber, said Mr. Marsh, and imposed restrictions on some applications and actually prohibited others. Some synthetic rubbers were, however, remarkably resistant to oils and were used extensively for oil seals and so on.

The silastic series of products developed in the U.S.A. represented a fundamental departure from previous synthetic rubbers in that the main structural units of the molecule, instead of being carbon atoms were atoms of silicon, the effect of which rendered the product highly resistant to heat. Rubbers based on carbon were destroyed in a comparatively short time at 150° C., silastics



would last almost indefinitely at such temperatures. Such material had certain disadvantages compared with natural rubber; low tensile strength, a higher permanent set; and more expensive to produce. An important factor which had resulted in the extension of the use of rubber in the engineering industry was the bonding of rubber to metal, which process included adhesives. The method included the brass plating process in which the metal was first brass plated and the rubber vulcanised in contact with the plating.

From a design point of view, quite apart from how much rubber was required to carry a certain load or whether in shear or compression, or even both, the question of simplicity of design should be considered. Unless the design was kept within simple proportions, complicated moulding equipment might be necessary, which would increase production costs. The author considered that it would be of advantage to the rolling stock designer to have available basic principles employed in assessing the amount of rubber to cater for certain loading conditions, but much depended on conditions of service, and he considered it advisable to bring in rubber engineers in the early design stages. Much progress had been made in recent years in the design of resilient wheels for some types of road vehicles, but the design of a similar unit for rolling stock had been somewhat retarded for various reasons, such as tyre braking and heat dissipation. Quite recently a resilient wheel had been designed which it was claimed would cater for such contingencies, and be capable of taking a static load of six tons per wheel.

### British Transport Commission Traffic Receipts

FOR Period 12, the four weeks to November 30, the improvement in British Railways merchandise and livestock receipts noted in the preceding four weeks was maintained, despite some inclement weather at the end of the period; nevertheless, with an increase in rates of 10 per cent. since last year and a reported revival in the industries productive of merchandise traffic, the infinitesimal increase over last year's figure is most unsatisfactory, and is reflected, doubtless for the reasons we suggested in our November 21 issue, in the serious drop in British Road Services takings.

Record steel production in November might have been expected to produce mineral receipts more than 10 per cent above the 1951 takings for the period in view of the rate increase; receipts in fact were less than 10 per cent up, though finished steel tonnage is not as great a

proportion of mineral traffic as might be supposed. Coal class receipts in like manner failed to achieve a 10 per cent increase over last year. The cold weather may have affected both mineral and coal class traffics adversely.

British Railways passenger traffic takings show a seasonal decrease over Period 11 and are slightly up on those for the corresponding weeks of last year. The aggregate of main-line passenger receipts for the 48 weeks of 1952 is less than 3 per cent over that for 1951, for which the Government intervention last summer in the matter of fares is largely responsible; the falling off in passenger travel, however, apparent during the summer months also contributed.

As for the preceding period, London Transport railway receipts showed an increase over the previous four weeks and over last year's figure, and bus and coach receipts also exceeded those of last year, largely because of fare increases. In the aggregate for the past 48 weeks, London Transport traffics are well up on 1951, with a very satisfactory yield from buses and coaches, which may help redress the balance of last year, for which L.T.E. road services showed a deficit of £2 million against net receipts of half-a-million from the Underground.

#### PERCENTAGE VARIATION 1952 COMPARED WITH 1951

	Four weeks to November 30	48 weeks to November 30
<b>British Railways—</b>		
Passengers ... ..	+ 4.2	+ 2.7
Parcels ... ..	+ 7.5	+ 7.8
Merchandise & livestock ... ..	—	+ 4.7
Minerals ... ..	+ 9.5	+ 14.8
Coal & coke ... ..	+ 7.8	+ 10.5
<b>Total ... ..</b>	<b>+ 4.8</b>	<b>+ 6.8</b>
<b>British Road Services ... ..</b>	<b>— 7.3</b>	<b>— 1.4</b>
<b>Road Passenger Transport ... ..</b>	<b>+ 8.3</b>	<b>+ 9.8</b>
<b>London Transport—</b>		
Railways ... ..	+ 15.6	+ 11.5
Buses & coaches ... ..	+ 14.4	+ 16.5
Trolleybuses ... ..	— 1.4	— 1.6
<b>Total ... ..</b>	<b>+ 12.2</b>	<b>+ 12.2</b>
<b>Inland Waterways ... ..</b>	<b>+ 8.1</b>	<b>+ 11.9</b>
<b>Aggregate ... ..</b>	<b>+ 4.0</b>	<b>+ 6.5</b>

### Danish State Railways

THE working results of the Danish State Railways for the year ended March 31, 1952, are shown in the table below, in comparison with the corresponding figures for 1950-51:—

	Four weeks to November 30		Incr. or decr.	Aggregate for 48 weeks		Incr. or decr.
	1952	1951		1952	1951	
	£000	£000	£000	£000	£000	£000
<b>British Railways—</b>						
Passengers ... ..	6,472	6,207	+ 265	101,571	98,833	+ 2,738
Parcels, etc., by passenger train ... ..	2,821	2,622	+ 199	32,864	30,471	+ 2,393
Merchandise & livestock ... ..	8,544	8,539	+ 5	96,377	92,025	+ 4,352
Minerals ... ..	3,548	3,238	+ 310	38,653	33,647	+ 5,006
Coal & coke ... ..	8,247	7,646	+ 601	93,096	84,230	+ 8,866
	29,632	28,252	+ 1,380	362,561	339,206	+ 23,355
<b>British Road Services ... ..</b>	<b>6,100</b>	<b>6,587</b>	<b>— 487</b>	<b>70,749</b>	<b>71,799</b>	<b>— 1,050</b>
<b>Road Passenger Transport:</b>						
Provincial & Scottish—						
Buses, coaches & trolley-buses ... ..	3,218	2,970	+ 248	44,259	40,296	+ 3,963
<b>London Transport—</b>						
Railways ... ..	1,425	1,232	+ 193	16,538	14,829	+ 1,709
Buses & coaches ... ..	2,980	2,604	+ 376	36,278	31,121	+ 5,157
Trolleybuses ... ..	705	715	— 10	8,771	8,919	— 148
	5,110	4,551	+ 559	61,587	54,869	+ 6,718
<b>Inland Waterways—</b>						
Tolls ... ..	74	68	+ 6	882	804	+ 78
Freight charges, etc. ... ..	98	91	+ 7	1,173	1,032	+ 141
	172	159	+ 13	2,055	1,836	+ 219
<b>Total ... ..</b>	<b>44,232</b>	<b>42,519</b>	<b>+ 1,713</b>	<b>541,211</b>	<b>506,006</b>	<b>+ 33,205</b>

	1950-51	1951-52
Km. open ... ..	2,834	2,856
Passengers on railways (millions) ... ..	98.9	99.2
Goods (million tonnes) ... ..	7.84	8.30
Train km. (millions) ... ..	34.9	35.6
Operating ratio ... ..	104.7	106.1
		Million kr.
Passenger receipts ... ..	195.9	201.2
Goods receipts ... ..	129.6	166.8
Bus receipts ... ..	20.6	23.5
Post receipts ... ..	15.2	17.8
Other receipts ... ..	14.4	16.7
Gross receipts ... ..	375.7	426.1
Working expenditure ... ..	393.3	452.3
Net deficit ... ..	17.6	26.2
Depreciation charges ... ..	10.1	12.5
Interest on capital ... ..	18.6	22.3
Deficit after charges ... ..	46.3	61.0

The increase in the number of journeys was exclusively in the Copenhagen suburban area, where the traffic amounted to 61,000,000 passengers compared with 59,400,000 in the preceding year. Elsewhere journeys decreased by 3.3 per cent. Bus journeys, on the contrary, improved from 19,600,000 in 1950-51 to 21,300,000. The total goods traffic rose by 5.9 per cent. Although there was a decline in less-than-wagonload traffic, and traffic to and from abroad, transit traffic increased; conveyance of new road motor vehicles from Germany to Sweden via Denmark has become a traffic of considerable importance.

The rise in goods receipts is the result of an increase in the goods rates on May 1, 1951. Working expenses were up by kr.59,000,000, of which kr.23,000,000 is attributable to higher wages and salaries as a result of the rising cost of living, and kr.26,000,000 to the increased price of coal.

## LETTERS TO THE EDITOR

(The Editor is not responsible for opinions of correspondents)

### Colour-Light Signals

December 10

SIR,—In an article entitled "How Railwaymen Penetrated the Fog Barrier" published in *The Manchester Guardian* today there occur some remarks which should be noted, and acted on, by the Railway Executive. I quote them, as follows: "... and passengers transferred to the electric trains (which could run much more regularly because the colour-light signals along their lines are more effective in fog than other types)"; and, "With colour-light signalling a 'fog signalman' is not used. The coloured lights are supposed to penetrate the fog, and although this past week there have been occasions when the footplatemen have had to stop to look for these too, yet their adoption in the London area has saved many hundreds of passengers many frustrating minutes."

These remarks help to confirm my opinion, expressed in a letter which you published in your January 26, 1951, issue, that the installation of colour-light signalling leads to better timekeeping and much greater safety than semaphores. If everyone is in agreement with this opinion it is apparent that the Railway Executive should have a programme for the installation of colour-light signals throughout Britain. Has it such a programme?

Yours faithfully,

G. RICHARD PARKES

Montcroft, School Lane, Formby

### Decentralisation of Railways

December 8

SIR,—Diverse though opinions may be as to the denationalisation of road haulage, few question the wisdom of the proposed new Transport Act in requiring the reorganisation of the railways.

It is clear there are to be at least four autonomous regions, outside the London Transport area. Five would be ideal: L.N.E.R., L.N.W.R., G.W.R., S.R. and—over the border—either N.B.R. or C.R. Scotland deserves to retain its independence, having valiantly demonstrated its abilities in that direction, although whether it shall be termed "North British" or "Caledonian" is a matter of choice. The resuscitation of the title "London & North Western" makes an obvious parallel, and the public would appreciate all these historical names.

Staff of the sparsely populated Eastern Region are hopeful of a permanent merger with their North Eastern neighbours. They still smart at losing the West Riding, which, with Sheffield, formed the only industrial part of the erstwhile Southern Area of the L.N.E.R. The N.E. Region should be reduced to divisional status, thereby securing to all in the eastern half of the country the same geographical scope afforded their colleagues of the present London Midland Region. The two regions are already operated as one, and share the same accountants. It is therefore logical to complete the unification of a system that ought never to have been divided.

Presumably, the Chief Regional Officers will become the highest of the railway high, with responsibility direct to the B.T.C. That is all to the good. We know our C.R.O.s, as we used to know our general managers. Beneath them, we must keep our divisional officers, while, lower still, the district organisation, as it exists today, merits almost universal satisfaction.

Decentralisation does not mean "de-standardisation." Such things as stores, stationery, uniform and equipment generally should remain the same for all the railways, purchasable by a supra-regional authority. Whether this should include locomotives is debatable. No one, not even the Motive Power Department, really welcomed the abandonment of the old traditions, the virtual disappearance of engines of character.

As these locomotives cannot be quantity produced, there

seems to be no reason why each region should not produce its own stock, in accordance with its own geographical and operating conditions; much the same applies to passenger vehicles, if not to goods wagons. One hopes, too, for the individual colour schemes we came to know so well, with the return of the "one man, one engine" principle.

Because the Bill is to allow a region to operate within the territory of another, it is evident that no adjustment of the current boundaries is contemplated. Might the opportunity be taken to straighten out some of the anomalies that have arisen since the penetrating line problem was allegedly solved? The Great Central route runs predominantly through the L.M. Region, but is in the Eastern Operating Area throughout. As three of its four control centres are staffed by the L.M. Region, the operating responsibility should be transferred to the successor of that region in its entirety.

Yours faithfully,

PETER COLLINS,

Stationmaster

Luffenham, Rutland

### The Isle of Wight Railways

December 9

SIR,—The question of the future of the Isle of Wight railways has come up again. One modification in the latest proposals is to keep open the line from Ryde to Ventnor; it has evidently become increasingly apparent during the past 18 months that to replace this service by buses would be impossible. Although it is obvious that the Ryde-Newport-Cowes line carries nothing like the traffic of the Ryde-Ventnor line it is still of great value. It would be hardly policy to cut off Newport, the island capital, from railway communication, nor the still growing port of Cowes, and there must also be considerable morning and evening traffic between them. How will the island's coal, now unloaded at the Medina Wharf, be handled?

Closure of the Freshwater, and, later, the Cowes line will make the west side of the island difficult of access to visitors. If they have to queue with their luggage for buses at Ryde or Cowes it is very certain that they will not come again the following year. The resorts of Sandown, Shanklin, and Ventnor will be able to live up even more to their reputation as the spoilt children of the island, but Yarmouth, Freshwater, and Totland will become greater Cinderellas than ever.

I imagine that the Freshwater, and Newport-Sandown lines would be much suited to diesel traction. Some intermediate stations which handle little traffic, such as Ashy, Whippingham, Ningwood, and Blackwater could be dispensed with, the Freshwater line could be worked as one section, and between Newport and Smallbrook it might be possible to manage with one crossing place at Haven Street.

For years the island railways have had to be content with secondhand locomotives and carriages. The Adams 0-4-4 tanks are very efficient machines but they are now around "three score" and cannot go on for ever. The Great Western 0-4-2 tanks would be a suitable type for the island. All credit must go to the island's railwaymen for operating an efficient service with limited equipment. Consideration must also be given to the ratepayers of the island; they probably pay rates enough without paying more as a result of extra wear and tear on the roads caused by the closing of the railways.

All the newspaper and magazine announcements I have seen have forgotten the branch from Brading to Bembridge. It is worthy of consideration particularly as it normally operates the most frequent service in the island.

Yours truly,

J. F. BURRELL

30, Longmead Avenue, Bristol 7

## THE SCRAP HEAP

### Source of Discord

"I knew that if we lived near a railway the sparks would soon begin to fly."  
—From "The Evening News," quoting a police court witness.

### Silly Symphony

Japanese railway workers have held their 32nd mass whistling display when the whistles of more than 4,000 locomotives throughout the country are blown at the same time.—From the "Evening Standard."

### Reserved for Mice

I was alone in my compartment when a man ran in from the corridor, exclaiming, "I've just seen a mouse come in here." Then the guard appeared. "There are two mice in the next compartment," he announced. "They must have come in from the sidings." He dealt with the invasion promptly by sticking an official label, "Not to be used," on that compartment. "It's just in case some ladies get in," he said. "They might be scared." He left me alone with my reported mouse. I had to alight before the train reached its destination, so I never discovered the fate of the privileged travellers next door. Were the station cats waiting for them in Manchester?—From "The Manchester Guardian."

### The African Can Make It

The theme of the African Industries Show, recently held in Nairobi, was "The African Can Make It" and the East African Railways & Harbours stand included many items such as furniture for railway houses, locomotive and carriage and wagon components, and other equipment, made by African artisans in the Chief Mechanical Engineer's workshops, Nairobi. A photographic display entitled "Training the young African" featured the Administration's apprenticeship scheme. Under this scheme approximately 30 young

Africans between the ages of 15½ and 16½ are selected each year for a five years' course of training in the Nairobi mechanical workshops to enable them to qualify as artisans in one of a number of trades.

### Oldest Named Train

The "Irish Mail" baggage label illustrated below has been designed by the Public Relations & Publicity Officer's Department of the London Midland



New baggage label for "Irish Mail" passengers via Holyhead and Dun Laoghaire

Region. With few breaks, including the war of 1939-45, the departure time of the night service from Euston to Holyhead has been 8.45 p.m. since its inauguration on August 1, 1848.

### The Earl's Waiting Room

When Rotherham Road Station, Eastern Region, is closed in January a private waiting room, which must be one of the few remaining in the country, will go with it. It is Earl Fitzwilliam's Room and stands at the town end of the station buildings. The station has always been connected with the Fitzwilliam family. It stands at a point where the coach road from Wentworth Woodhouse used to end, according to the first Ordnance Survey map of 1851. The Kirk Gate Lodge at the end of the road was immediately opposite the entrance to the station. It is thought

that the sixth Earl granted the land to the former Manchester, Sheffield & Lincolnshire Railway Company with the condition that the station should be constructed at that spot. Trains used to be stopped at the station for the Fitzwilliam family, but the right has not been exercised for a considerable time.

### Round the Station—

#### Christmas Eve

Buffets have sold out of whisky and sherry,  
The station is settling down for the night.  
A rather wild party, they say, on the "Ferry,"  
Ninety per cent most decidedly merry—  
Pray that the lock gates are working all right!

All through the morning long barrow-trains rumbled,  
With baggage for Switzerland, Paris, and Rome;  
Last-minute passengers jostled and grumbled,  
And more than one paterfamilias mumbled:  
"I'm bally well spending next Christmas at home."

This is the moment when faint melancholy  
Is apt to creep in with the mist and the cold.  
Bill says it's not very hard to be jolly,  
Surrounded by mistletoe, mince-pies and holly,  
But out there it's too blooming perishing cold

He's quite a bit merry, himself, the old sinner,  
Though canny enough as concerns "Number One"—  
He's happy, he says, if he gets a good dinner,  
With "wallop" ad lib, an occasional winner,  
A smoke, and a nap, when the long day is done.

The Christmas trees droop, but the night air is sweet;  
There's the last train—a shrill telephone rings;  
A policeman plods by on his regular beat,  
The sound of a carol drifts in from the street,  
As Santa Claus patiently waits in the wings.

Ah, there go the bells and the magic's begun;  
A tick of the clock and Christmas is here,  
Transforming my tiredness to frolic and fun  
And a fantastic urge to embrace everyone—  
"All the best! Merry Christmas, and Happy New Year!"

A. B.  
E2



East African Railways stand at African Industries Show. An African learner tracer is at work on the right



## OVERSEAS RAILWAY AFFAIRS

(From our correspondents)

### RHODESIA

#### Bulawayo-Umtali Restaurant Service

A new restaurant car service was introduced on the Bulawayo-Umtali-Bulawayo run on October 20. It operates six days a week in each direction.

The service is experimental and will be reviewed after a period of three months. If it is found that it receives the support expected and does not inconvenience the public seriously by limiting the accommodation on the trains, it will be continued.

There is no corridor service apart from the serving of morning tea and coffee, but a special service is operated for the convenience of invalids and elderly persons or women travelling with young families who cannot be left unattended.

As far as the Salisbury-Umtali-Salisbury service is concerned, the saloons are taken off at Umfesi after lunch and connected to the train returning from Umtali the same day. On one day each week—Saturday night from Bulawayo—the saloon will run through to Umtali. There is to be no service on the Sunday night train from Bulawayo or on the Tuesday train from Umtali.

### NEW ZEALAND

#### Wage Increase Approved

Increased wages to railway employees involving an estimated annual cost of about £765,000 to the Department have been authorised by the Government Railways Industrial Tribunal in terms of agreement reached between both parties. The increases have been made to apply the Arbitration Court's 1952 standard wage pronouncement to railway workers.

The increases range from 3d. an hour for those on labourer's rate to 3½d. an hour for those on tradesmen's rates and above, and from £10 a year for those on salaries less than £399 to £30 a year for those above £539.

### CANADA

#### New C.N.R. Freight Service

On January 1 the Canadian National Railways will introduce a service whereby railway-owned lorries will haul specially-built trailers to railway freight terminals. There the trailers will be placed on flat wagons and conveyed by fast freight trains to their destinations where they will be attached to lorries and then hauled to works and warehouses.

The inauguration of the service is the outcome of studies by C.N.R. officers of road-rail transport systems in the United States and Europe. The first application will be between Montreal and Toronto. Work on the plans and of specially equipping six 50-ton steel flat wagons for the new service began several months ago and orders have been placed for the con-

struction of 12 trailers. The building of ramps at Montreal and Toronto terminals to facilitate operation and handling is nearing completion.

The flat wagons will be 3 ft. 5 in. above rail, the lowest type constructed, to reduce the height of the load to meet clearances. They are more than 52 ft. long and 10 ft. wide and have an average load limit of 58 tons. Each will carry two 24-ft. trailers of 12-ton capacity each.

### ARGENTINA

#### Buenos Aires-San Juan Diesel Service

The Ganz diesel express service introduced by the General San Martín Railway between Buenos Aires (Retiro), Mendoza and San Juan, and recorded in the October 10 issue, has been increased from twice to three times a week.

### FRANCE

#### S.N.C.F. Economics

In a debate in the National Assembly, M. Andre Morice, Minister of Public Works & Transport, replying to a demand that the financial concessions to the S.N.C.F., referred to in the August 15 issue, should have effect only to the end of 1953, stated that the compensatory payments were necessary to encourage the S.N.C.F. to eliminate its deficit. Without these payments he felt that the large gap between revenue and expenditure would have a disheartening effect on the S.N.C.F. and its staff. The

Minister also said that the S.N.C.F. had prepared a programme of the economies which would be necessary to improve its financial situation to the extent of fr. 30,000 million (£30,000,000) during the next four years. If this programme is carried out the deficit remaining, after taking into account the compensatory payments made by the State, will be wiped out.

#### High-Capacity Phosphate Wagon

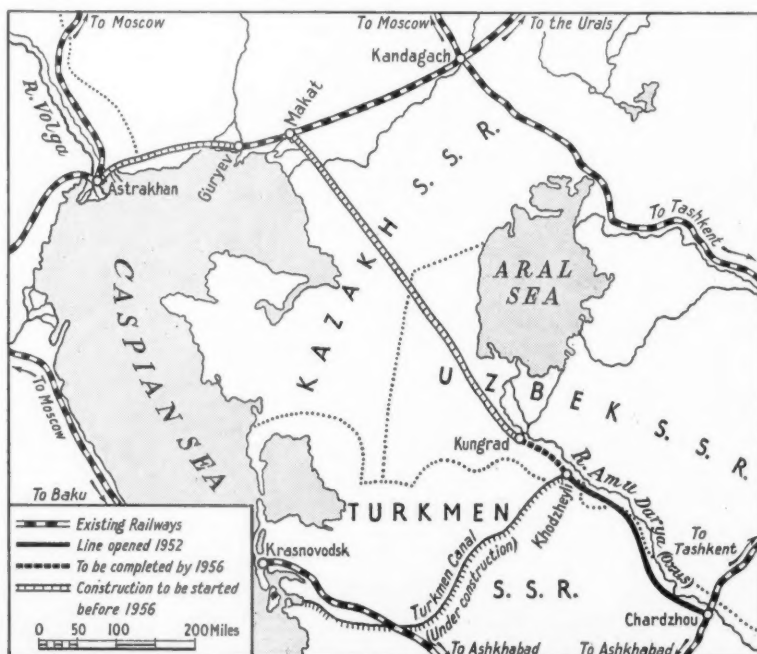
The S.T.E.M.I. Company has completed a lightweight high-capacity wagon for bulk conveyance of phosphates. It is constructed largely of light alloys with an aluminium base and has a tare weight of 15 and capacity of 64 tonnes, with automatic discharge. Length over buffers is 42 ft. 5 in. and overall width 10 ft. 4½ in.

### U.S.S.R.

#### New Lines in Central Asia

The first through train on the new line from Chardzhou in the Turkmen Soviet Socialist Republic to Khodzheyli in the Uzbek Soviet Socialist Republic ran in July. This section of line, approximately 370 miles long, runs parallel to the Amu Darya River throughout its length and connects the main system of Soviet Central Asia with the construction works now proceeding on the Turkmen Canal, which is to link the Amu Darya River and the Aral Sea with the Caspian Sea.

It is planned to complete the extension of this line from Khodzheyli to



Existing and projected lines in Central Asia

Kungrad, approximately 50 miles, during the current (1951-6) Five Year Plan. Work is also to proceed on the 400-mile extension from Kungrad to Makat and the 200-mile line from along the shore of the Caspian Sea from Guryev to Astrakhan. The combined effect of these extensions will be to provide direct routes between the newly irrigated areas of the Turkmen and Uzbek Republics and both the Urals and European Russia.

## NORWAY

### Rolling Stock Orders

Since 1945 the State Railways have received rolling stock to a total value of kr. 137,000,000. During 1953 the following will be delivered: nine electric locomotives, five electric railcars, 14 diesel cars, 10 observation coaches, and 29 suburban coaches. Four new restaurant cars for the Oslo-Stockholm service are awaited.

### Oslo Central Station

In connection with the construction of a new Central Station at Oslo, a

delegation including the Minister of Communications, Mr. Jakob Pettersen and Mr. H. E. Stokke, General Manager, State Railways, has visited Brussels, Florence, Rome, and Munich, and inspected new stations there.

### Plan for Further Electrification

The Minister of Communications has prepared for submission to the National Assembly a plan for the electrification of the following lines: Drammen - Eidanger; Ski - Sarpsborg (lower line); Hoenefoss-Roa-Oslo; Voss-Hoenefoss (Bergen line); Roa-Gjøevik; and Hamar-Dombas-Trondheim.

The plan is expected to be completed in 10 or 12 years and the expenditure estimated is kr. 275,000,000. At present 633 route miles of the State Railways are electrified.

## WESTERN GERMANY

### Third Headlamp for Locomotives

Steps taken by the German Federal Railways to reduce the frequency of level crossing accidents include tests with a view to increasing the visibility of trains approaching in darkness. The

present practice is for locomotives to carry two white headlamps, which have often been mistaken by motorists for those of road vehicles. Tests are at present being conducted on a secondary line in Bavaria with three engine headlamps arranged in a triangle, which arrangement it is hoped will result in lower accident figures.

## AUSTRIA

### Arlberg Doubling Postponed

Because of the financial stringency the scheme for laying a second track on a 37-mile section of the Arlberg line has been postponed. The section is between Bregenz, at the eastern end of the Lake of Constance, and Bludenz, at the western end of the Arlberg section proper, whence the line rises from an altitude of 1,830 ft. over 15½ miles to 3,992 ft. at Langen am Arlberg, at the western end of the Arlberg Tunnel. The doubling of the 8½-mile section between Bregenz and Lauterach, junction of the main line from Switzerland (St. Margrethen), a more modest alternative scheme, has also had to be deferred.

## Publications Received

*The Railway Builders.* By Emmeline Garnett. London: Hodder & Stoughton Limited, Warwick Square, E.C.4. 7½ in. x 5 in. 231 pp. Illustrated. Price 12s. 6d.—To some railway enthusiasts the famous engineers of the nineteenth century remain little more than names. The author of this book shows George and Robert Stephenson as personalities against the background of their period by the discriminating use of dialogue authenticated by quotations from letters, contemporary press reports, and similar material carefully selected and presented to form a continuously interesting narrative for young readers. Although announced as a new "juvenile," the book contains much that will appeal to their elders and scrupulously assesses the technical contributions of the two Stephensons to the development of mechanical and civil engineering. The black and white illustrations, for example, include a diagram of the *Rocket* boiler showing the arrangement of the tubes to give increased heating surface, the realisation of which was due to the Stephensons although the idea had been suggested by Booth.

*Materials Handling in Industry (Electricity and Productivity Series No. 4).* London: The British Electrical Development Association, 2, Savoy Hill, W.C.2. 9 in. x 5½ in. 142 pp. Illustrated. Price 8s. 6d.—This book is one of a series produced under the auspices of the British Electrical Development Association which deals with specialised industrial applications of industry. Its object is to show how better materials handling can increase productivity and at the same time improve the worker's

lot, and it illustrates how better handling of materials is achieved by judicious use of mechanical equipment when process integration or replanning will not obviate such handling. Equipment generally in wide use is dealt with at some length with exact description of its function; it is classified for purposes of description as runways and lifting equipment; cranes; conveyors; floor transport and storage; and miscellaneous equipment. A supplementary list is given of equipment handling in individual articles and bulk material. There are some useful preliminary chapters on the broader aspects of the matter, of which Chapter 3, on the application of mechanical equipment, embodies some sound maxims. The photographic illustrations gain in usefulness by depicting equipment in general use, with the name of the maker. An appendix lists British Standards applicable to mechanical handling equipment.

*Battery Charging.*—Some useful hints on the maintenance of accumulators are given in the booklet, "Putting it Back," published by Easco Electrical Limited. Brief particulars are included of Rectostat low-rate chargers and of transformers and handlamps for low-voltage lighting in inspection pits and elsewhere where damp conditions may prevail.

*Careers in the Railway Service.*—British Railways have produced a 32-page illustrated booklet, entitled "Careers in the Railway Service," and intended to help in placing boys in employment. Most of the booklet describes the types of employment on the railway and the remainder is devoted to conditions of service, educational and welfare schemes, and

recreational facilities. Rates of pay are given in a separate leaflet distributed with the booklet, copies of which may be obtained free from labour exchanges by young men who are thinking of making the railway their career.

*H.R.C. Fuses.*—A new leaflet, Publication No. 81001, from the Brush Electrical Engineering Co. Ltd., announces the introduction of a range of high rupturing capacity fuse links after 18 months of development work. The fuse elements are of pure silver surrounded by an inert granular material of controlled size enclosed in a ceramic material of high thermal, mechanical and electrical strength. Current ratings range from 2 up to 300 amp. One of the fuse wires is arranged to provide visual indication of the intact or blown condition of the fuse link.

*Industrial Electrification.*—A new Industrial Catalogue (PD 3444) issued by the Industrial Group of Philips Electrical Limited consists of 32 pages concisely setting out the full range of Philips industrial products under section headings, such as arc welding, resistance welding, and high-frequency heating. The leaves are loosely bound and in a cover which permits additions and alterations to be made at a later date. Other recent Philips publications are the new revised Arc Welding Catalogue (PD3515), showing the recent additions to Philips arc welding equipment; and a special Arc Welding Electrode Wall Chart (PD 3484) designed for display in factories and workshops, giving the full range of Philips electrodes in tabular form together with British code numbers, mechanical properties, welding current, diameter, and length.

## Unusual Repair of Bridge Girder

*Method of dealing with a fractured bottom flange in road bridge over the L.M.R. at Northwich*

AN interesting repair of a cast iron girder in a bridge carrying a busy road over the railway was recently carried out on the London Midland Region. The bridge is of two spans, one of 27 ft. 1 in. over the up and down main lines, and one of 17 ft. 8 in. over a loop line at Northwich Station. It is 25 ft. between parapets, and has a footpath 5 ft. 5 in. wide on one side.

The superstructure of each span consists of seven cast iron girders at 4 ft. 6 in. centres with brick jack arches be-

tubes embedded in concrete, which lay immediately over the girder and adjoining jack arches.

### Extent of Fracture

Detailed examination revealed that the girder had a sag of about 1 in., but there were no appreciable cracks to be found in the jack arches. It seemed certain that the fracture extended right through the section of the girder and that it had been prevented from falling by the combined

the demolition of the jack arch on the footpath side would have entailed temporary support being given to other pipes and cables under the footpath. In addition, the footpath would have been so reduced in width during the carrying out of the work that it might have been necessary to provide a temporary foot-bridge.

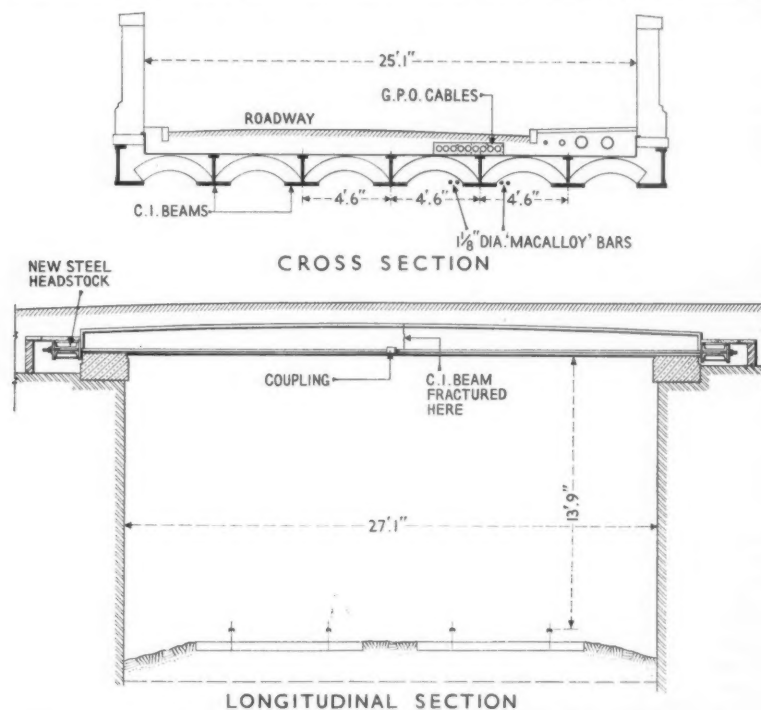
The only alternative method which seemed to offer substantial advantages was to restore the live load carrying capacity of the girder by introducing a compressive force in the bottom flange, which might be done by stretching high-tensile steel bars between suitable anchorages attached to each end of the girder. Although it was realised that the theoretical problem was not capable of precise solution, it was considered that there was a reasonable chance of success, and it was decided to proceed on these lines.

### Application of Compressive Force

It was evident that the dead load previously carried by the girder had been transferred to the jack arches and surrounding material, and it was, therefore, clear that the high-tensile steel bars would have to be sufficient to induce a compressive force high enough to take both dead and live loads. Four high-tensile steel bars,  $1\frac{1}{2}$  in. dia., were placed with their horizontal centre lines 2 in. from the underside of the bottom flange, two bars on each side of the girder. The bars were each jacked to 45 tons, and after the nuts had been tightened the residual load in each bar was 42 tons, thus inducing a compressive force in the girder of 168 tons. Under this eccentrically applied load, assuming a homogeneous section, which would be a reasonable assumption if the fracture closed completely, the compressive stress in the cast iron would be well below the usually accepted safe limit under dead load plus Ministry of Transport live load.

The fracture did, in fact, appear to close, but it cannot be established that it closed completely, therefore it would be reasonable to assume that the compressive stress in the cast iron under certain conditions of loading may be high, but it seems unlikely that it would reach unduly high proportions, since some assistance would be offered by the jack arches and backing material. Moreover, the calculated extension of the bars under the jacking load, after making allowance for elastic shortening of the girder and steel headstocks plus  $\frac{1}{2}$  in. for the width of the fracture, was checked and found to be correct within ordinary measurable limits.

The bars were connected at each end to stiff welded steel headstocks bearing against the "closed" ends of the cast iron girder, as shown in the diagram. The headstocks were placed in position



The position of the bars used to induce a compressive force in the girder is shown in the cross sectional view, and the headstocks to which their ends are connected are seen in the longitudinal section below

tween them. The girders are of the familiar cast iron type, hog-backed, and with bottom flanges bowed in plan. They have cast stiffeners at intervals, with one occurring at the centre.

One of the girders in the larger span was found to have a fractured bottom flange. The fracture was about  $\frac{1}{2}$  in. wide and occurred adjacent to the centre stiffener.

After road vehicle traffic had been restricted to one half of the bridge in order to relieve the defective girder of live load, excavation was begun in the roadway in an attempt to ascertain whether the fracture could be traced in the top flange. This was found to be impracticable owing to the presence of a nest of nine Post Office cables in steel

action of the jack arches and surrounding backing. Some relief of live load had also, no doubt, been afforded by the distributing effect of the cable tubes.

While in all probability the girder would have remained as it was without appreciable worsening for some considerable time under dead load conditions, it was important to restore the full road width to traffic quickly, which meant that some temporary strengthening was necessary until such time as the bridge could be reconstructed.

The normal course would have been to replace the defective girder, but the cost of such a repair would have been heavy, because not only would the Post Office cables have needed support and possibly some temporary diversion, but



from the top without disturbing the cable tubes, and the bars were threaded through the headstocks from under the bridge. As the bars were delivered to the site by road, and might have sustained damage if each had been in one length, they were supplied in two lengths and coupled together at site before erection.

The jacking operation was carried out from one end in two stages, the two inner bars being jacked simultaneously and then the two outer bars. It was

considered advisable to build a small access chamber round each headstock to allow the anchorages to be inspected and adjustments made if necessary. Furthermore when the time comes for reconstruction of the bridge, the demolition work will be much easier than if they were concreted in. The projecting screw threads and nuts were, of course, heavily coated in grease.

Although the high-tensile steel rods are somewhat more resistant to corrosion than mild steel, they are in a vul-

nerable position and are subjected to engine blast. They were wrapped and coated with a bitumen compound.

The work was carried out under the direction of the Bridge Assistant to the Civil Engineer, London Midland Region, and the full width of the roadway was restored to traffic one month after the discovery of the fracture. Interference with rail traffic was limited to one period of six hours complete possession of the up and down lines on a Sunday, and one period of four hours on a weekday.

## Electric Drive for Crossing Barriers

### *Rheostatic brake system controls boom descent*

A NEW electrically-operated barrier designed to meet the needs of highway crossing protection in countries where the use of gates is not obligatory has been put into production recently by the Westinghouse Brake & Signal Co. Ltd. It also has a useful application for the control of road traffic at factory and depot entrances.

Known as the Style "A" barrier, it is designed to be carried on a 5½-in. dia. pipe post, to which the operating mechanism, powered by an electric motor, is rigidly attached. The motor drives the barrier arm from the horizontal to the vertical position, where it is securely held by an electrically-operated brake. In the vertical position the arm is completely clear of all road traffic and offers no obstruction.

The arm is counterbalanced, but biased to return to the horizontal position when the brake is released; and during descent its speed is governed by rheostatic braking. It can be reversed at any time during its descent, and raised again to the vertical position should this be necessary. The design allows for main barrier arms of lengths up to 38 ft., and provision is made for the fitting of sidewalk barrier arms when required.

It is desirable that booms should be of wood or similar construction, to prevent the barrier machine being damaged by a road vehicle which is out of control. The necessity for speedy replacement of a damaged boom makes it imperative, in installations overseas, for booms to be made locally, and barriers for export are therefore supplied without booms unless the latter are specially called for.

A crutch for supporting the arm whilst it is in the horizontal position is not essential. Counterweights are fitted to the free ends of the carrier arms, and are adjustable to give the required return effect. Four basic cast-iron weights are available, and these, in various combinations, will enable any boom up to 38 ft. in length to be fitted to the carrier arms.

Spring buffers are fitted inside the main case. They are designed to bring the mechanism to rest in the event of

the boom being broken off whilst in the horizontal position or the counterweights being broken off whilst the barrier is raised.

A stop on each buffer provides adjustment for the final position of the barrier in the raised and lowered positions. This is made by removing the two covers and adjusting the nuts and screwed rods thus exposed. By this means the horizontal position of the barrier can be aligned from the outside of the machine, and any tendency to "droop" on the part of the boom can be corrected.

A circuit controller is provided in the machine, with capacity for a maximum of five circuits in addition to contacts employed in the barrier control circuit.

### Operation

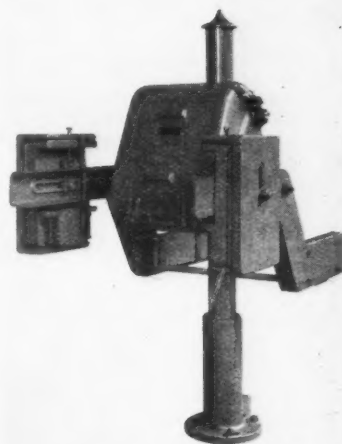
The main shaft of the machine is driven through a train of gears by a d.c. series motor from a 12-V. or 24-V. supply, preferably from a secondary battery; or, alternatively, the barrier can be operated by a hand generator, the necessary hold-off current being supplied by primary cells. Both main shaft and motor run on ball bearings, and the idler gear is fitted with a sleeve bearing which can be lubricated. The motor drives the gears through a friction clutch, which is designed to slip when the barrier load would be such as to make the motor overload, due, for example, to the barrier being deliberately held down.

Control of the barrier is by one wire and return. Energisation of the control wire operates the brake magnet, which is fitted with a change-over contact. On picking up, the brake magnet disconnects the snubbing resistance from the motor and connects the motor to line, at the same time applying the brake. The latter acts on the motor shaft through a free-wheel so that the motor is free to wind the barrier up but cannot be driven in the opposite direction. A quick-acting limit switch breaks the motor circuit when the barrier has moved through approximately 85 deg. whereupon the motor slows down and, as soon as it comes to rest,

is prevented by the brake from rotating in the opposite direction under the return torque exerted by the boom. The barrier is thus held with the boom in the vertical position.

As the barrier approaches its raised position, an economiser contact across the high-resistance portion of the brake magnet winding opens, thus reducing to a minimum the current required to hold the barrier raised.

To lower the barrier, the control wire is de-energised, thus releasing the brake and allowing the motor to rotate in the reverse direction as the barrier descends under its own weight. On releasing,



*Crossing barrier operating mechanism*

the brake magnet change-over contact connects a snubbing resistance across the motor. The time of descent is adjustable by varying this resistance.

In order to gain independence from supply failures, it is recommended that the barrier should be operated from a secondary battery.

In the event of the supply to the barrier being interrupted, the boom may be raised by hand to allow traffic to pass. Flashing light signals and a warning bell, or other warning devices, can be installed with these barriers.

## Power Signalling at Euston, London Midland Region

*First use of the electro-pneumatic system at a main London terminus*



*Exterior of new Euston signal box looking towards the north*

**A**T Euston Station the London Midland Region has brought into use a new electro-pneumatic installation to facilitate traffic handling, which for long has been hampered by an awkward track and structural layout. The scheme, announced on March 8, 1951, and estimated to cost some £300,000 has included the replacement of three signal boxes by one power-operated box.

Euston, the first main line terminus in London, was opened on July 20, 1837, when the first section, to Boxmoor, of the London & Birmingham Railway, was brought into use, but was still in an unfinished state. It early became an important centre for traffic to such places as York and the North of England generally, and after the construction of other lines into London, such as the Great Northern and Midland, had diverted much of that to other routes, the expansion of the London & North Western Railway, formed by amalgamations in 1846, more than compensated for the losses. The celebrated Great Hall and adjacent block of offices were built after that year. Originally, the station consisted of an arrival and a departure platform line, separated by two other lines, with turntable connections between them and the carriage sheds. There were four lines of way to Camden, a consequence of the intention, at one time entertained, of bringing the Great Western Railway into Euston, but for a time two of them were little used.

The first real improvements were made in 1870-73, when additional platforms were opened, and in 1883 powers

were obtained to enlarge the layout still further on the western side. It took from 1887 to 1892, to complete the work, in the course of which the present platforms 4 and 5 were brought into use among others already working. This extensive change divided the station into two main portions. The signalling arrangements in use up to that time had become completely inadequate and on April 27, 1891, the large No. 2 signalbox was opened, replacing one of 54 levers. It contained two large frames, each of 144 levers, arranged in the centre with the signalmen working face to face, and was then the largest in the country and probably in the world. Its working was not facilitated by its being located between two overbridges, the southern of which was removed this year. On March 11, 1906, the original frames, of F. W. Webb's tumbler action type, with direct lever locking, were replaced by two others, arranged in the windows, with the men working back to back; these were of the catch-handle pattern, with ordinary tappet locking, introduced by A. M. Thompson, then the Signal Superintendent. As the position of the outside connections had necessarily to remain the same the levers in these new frames had to be numbered from right to left, the reverse of usual practice, to keep the same numbers to the same functions.

During the early years of this century the Euston to Camden widening was undertaken, resulting in the provision of four actual running roads to Camden, with a subway under the departure lines, enabling empty stock from incoming

trains to reach the carriage sidings without blocking the departure roads; additional siding accommodation eliminated much unnecessary mileage then being run to and from Willesden. Concurrently with these improvements electric power signalling on the "Crewe" (Webb and Thompson's) system, with points operated by motors and semaphore and disc signals by solenoid mechanisms, was installed at Camden No. 1 and Euston Nos. 3 and 4 boxes. In time many signals connected to the large No. 2 box also were altered to solenoid operation.

Euston No. 1 box, known as the Bell House, situated on a gallery over the roadway at platforms Nos. 2 and 3, controlled the working of platforms 1 to 5 and slotted certain signals, some carried on the roof stanchions, but of recent years some of its controls have been abolished. Block working was effected by the L.N.W.R. standard Fletcher's three-position, three-wire instruments, supplemented by "step-by-step" describers.

In the late 1890s proposals were put forward for rebuilding the entire layout, but were not proceeded with. A scheme was advanced in 1907 for a low level tube station with a terminal loop; this also was not followed up. The electrification of the suburban lines to Watford had, however, been decided on, involving considerable alterations at Camden, new tunnels under Primrose Hill and additional tracks northwards. The 1914 war led to a long delay in completing the work, so that electric trains did not commence to run into Euston until July 10, 1922. In 1935, platforms Nos. 12 and 13 were lengthened to accommodate 15-coach trains and some colour-light signals were installed. Such signals had been installed on the electric lines between Camden and Watford—the work was completed throughout by 1932—and on the main lines from Camden to Sudbury in 1943; it was extended from Camden to Euston two years later. Gradually also, colour-lights replaced a number of semaphores in the Euston station area.

### The Present Improvements

A scheme for a large and complete re-arrangement of this important terminus, with new frontage to the Euston Road, having been brought to nothing by the second world war, it became necessary to make such improvements as were imperatively demanded by the condition of the station, to obtain better and much-needed facilities for handling the traffic, always heavy but exceptionally so at certain seasons. The out-of-date condition of the signalling alone demanded that some improvement should be undertaken as quickly as possible. On March 8, 1951, the London

Midland Region was able to announce that work would be begun on a scheme, estimated to cost some £300,000 and be completed in two years, with far-reaching benefits to train operation. This involved a new power-operated signalbox, with colour-light signalling and continuous track circuiting, replacing Nos. 1, 2 and 3 boxes. The main line working hitherto under the control of No. 4 box was to be transferred to the new box, leaving only carriage and engine line movements to be handled by No. 4, to be re-named Euston Carriage Sidings. Block working for running movements was to be replaced by train describers. The site finally selected for the new box was on the up side of the line just north of the Hampstead Road overbridge.

#### Re-Arrangement

The track layout had become very complicated in the course of time. It contained 18 diamond crossings, of which 11 had inside or outside slips and two had double slips. Curvature in places was very sharp. Wear and tear were heavy and maintenance was difficult. The presence of the two Amphill Square bridges had always made the working awkward, especially in bad weather, but, as explained above, one has now been removed. Opportunity has been taken to re-arrange the permanent way so that nearly all connections now have what are called "C" and

"D" type switches instead of "B" type, giving much smoother running and reducing maintenance costs.

Lack of platform space had long been a most serious disadvantage.

Up trains frequently had to stand with their tails foul of the connections, so preventing another from being run to a platform line otherwise able to receive it. Removal of the bridge and of the old large No. 2 signal box has enabled platforms to be lengthened and additional accommodation to be obtained, as follows:—

Platform No	Additional length of platform	Additional available length of platform line clear of connections	Platform accommodation for 60 ft. 8 in. coaches and engine of 75 ft.	
	Ft.	Ft.	Originally	As now
1	190	300	15	19
2	90	220	15½	17½
3	120	200	13½	15½
6	85	110	13	14½
7	85	130	6	7
15	90	90	14½	16

#### New Signalling

The area controlled extends up to that operated by Camden No. 1 box. (There is a possibility that eventually this also will be brought under the control of the new box, in which the necessary spare levers and other accommodation have been provided in anticipation.) The old No. 3 box at the sidings outlet has been abolished and the working transferred to the new box. This has two floors. The lower contains the relay room with

fuse boards, and so on, and accommodates over 1,000 relays of various types, with an extension at the north end housing the air compressing and electric power standby plant; the air reservoirs are placed outside this. The operating room contains a Westinghouse Style "L" frame of 227 levers, of which 26 are spare, with 14 spaces. The interlocking is all-electric. There are about 350 routes controlled by the frame, which has the usual "N" and "R" illuminated visuals for point levers; the running signal visuals repeat all aspects,

exactly as they appear to the drivers. Over the levers are the train describers, emergency block bells, certain telephones and other auxiliary apparatus, the whole built into a continuous panel extending the full length of the frame. Above are two illuminated diagrams, each 15 ft. long, of the normally dark type; the occupied condition is shown by two red lights, placed in the centre of the relevant track circuit section. These diagrams are constructed on the



Interior of the old No. 2 box at Euston, with its 288 levers. This box has now been abolished



method now standard on the London Midland Region by which the layout is reproduced photographically on a rolled plastic surface, which is easily kept clean and allows any alteration to be simply effected. Block telegraph working has been abolished, except on the down empty carriage line to Carriage Sidings box; traffic on all other lines is handled by describers, supplemented by block type bells for use in emergency.

#### Train Description System

The describers had to be arranged to cover certain special local requirements. For example, that for the up engine line 1 is capable of showing up to 10 movements approaching in section from Carriage Sidings. On this line two or more engines sometimes arrive coupled together and covered by one description. If they are sent away separately the signalman actuates a special push-button, to prevent the description being cleared off prematurely. This particular describer is of the all-relay type and was designed and made by the London Midland Region staff, but those for the running lines, up and down, are of the selector switch and relay pattern; the present equipment is provisional only, and will be superseded by permanent apparatus as soon as can be arranged. Transmission is manually effected. The first announcement of an up train is re-

ceived when it passes Willesden. When it reaches Kilburn another is received via Camden No. 1 box, as a further advice to the men at Euston. For up trains the class only is indicated, but for the down lines both class and destination are shown and the line, fast or slow, to be followed from Camden.

#### Emergency Warnings

Emergency warnings are provided to indicate when any train passes signals No. 7, 46/47, 78 or 155 at danger, consisting of a continuous ringing bell with lamp indications, which must be returned to normal by the signalman operating a button.

#### Telecommunications

A comprehensive telephone network provides communication for the regulator, train recorder and the signalmen, using omnibus circuits, direct lines to strategic points, and connections to the station telephone exchange. All these circuits are grouped on three keyboards fitted on a desk conveniently situated in the bay window of the operating room, access being available to all circuits from each keyboard. The signal box is called selectively on all circuits; lamp calling is used throughout. A teleprinter fitted centrally on the same desk is used for the transmission of up and down train reports between the

signal box and Willesden Junction telegraph office. Up train reports from Willesden are received simultaneously by teleprinter at the yard inspectors' office, the Train Arrival Bureau, and the Telephone Enquiry Bureau.

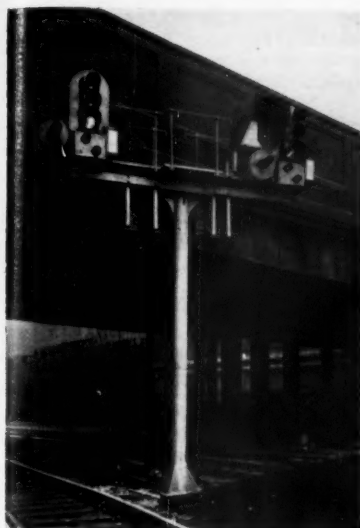
In addition, telephone fittings are incorporated in the instrument panel above the lever frame for the termination of the signal post telephones and other circuits to which the signalmen require frequent access. This panel also accommodates the microphones and switching keys for the loudspeaker communication with the yard inspectors. The internal signal box loudspeakers are built into the illuminated diagram panels. The apparatus associated with the telecommunications equipment and the train describers is accommodated in an adjacent room. The whole of the telephone equipment was designed, assembled and installed by the Region's staff.

#### Signals

Signals for running movements are of the multi-lens type, the number of aspects varying with requirements, as shown on the accompanying folding plate of the layout, with shunt and subsidiary signals of the position-light type. The latter show one red and one white light when "on," except subsidiaries which have no "on" indication. (There



Lever frame in the new box, which, with 227 levers, has taken over the work formerly handled from the old Nos. 1, 2, and 3 boxes at Euston, and part of that dealt with by No. 4



Departure signals for platforms 12 and 13

is no case of a ground signal requiring the left-hand light to show yellow.) Running signals have close-up indication prisms but no side or backlights; on the backs of certain signals, where the engine of a train may have to stand in advance of them when waiting to start from a platform, stencil type indicators, which display the word "off," as well as the route indication then applying, are provided to enable the driver to assure himself without leaving the footplate that the signal has been cleared correctly for him. Route indicators are of the "theatre" or lamp type, showing a number or letter, and work with both running and subsidiary signals; those working, however, solely with subsidiary or ground signals are of stencil type. Circumstances at Euston do not call for the use of junction indicators.

When a running signal lever is pulled over all ground signals in the route concerned are cleared and subsequently held at "off," being replaced to "on" each one in turn as the tail of the train passes it. This avoids having to pull all ground signal levers in addition, and was first adopted by the London Midland Region at the installation at Lime Street Station, Liverpool, described in our August 19, 1949, issue.

To guard against the possibility of a train being inadvertently signalled into a fully-occupied platform, whilst allowing complete freedom for engine, etc., movements, the track circuit in each platform is divided into two portions and a short berth track circuit provided at each home signal. If the outer platform track circuit is occupied, the calling-on aspect cannot be displayed if the length of the approaching train is greater than the berth track circuit.

All signals are approach locked, with time relay release. Considerable freedom has been given in the matter of alternative routes from certain signals, to provide sets of parallel movements and enable trains to be run round others

which may perhaps be standing out of the platforms, a condition that will seldom arise in future. It has not been practicable to lengthen every platform to exclude the possibility entirely.

#### Train Starting Indicators

Adjacent to each platform starting signal on each of the illuminated track diagrams are two yellow lamps. These are lighted by the operation of a plunger on the platform concerned and indicate that a train is ready to depart. A bell gives a short ring each time a plunger is depressed. A second plunger on each platform operates an indicator consisting of a black stencil letter "R" on an illuminated background to notify the driver that the guard's signal to start has been given.

#### Point Operation

Point operation is entirely electro-pneumatic. There are 94 Westinghouse type movements, with 5 in. by 8 in. cylinders and Style "CP" cut-off valves mounted alongside on concrete foundations and connected to the mechanisms by flexible rubber hoses. These valves ensure the maximum economy in air consumption as they arrest the flow of air to the cylinder immediately full operation and locking of the points have occurred. Thus the amount of energy admitted to each cylinder is restricted to the particular demands of the load at each operation and a reserve of power is always available but is used only when required. The valve magnets are of the d.c. type, but as there is d.c. electric traction in the station a.c. control is used.

Each valve magnet has a specially designed isolating transformer and rectifier, to avoid false operation by stray currents or capacity effects. These

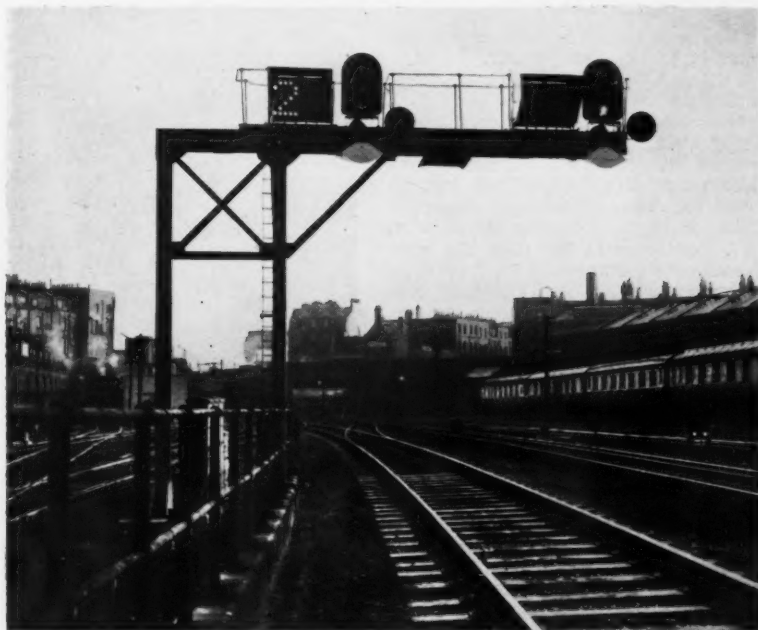
are mounted as an integral part of the cut-off valves. The a.c. point detection circuits are fed through individual isolating transformers located adjacent to the valves. Proving contacts are fitted to the valves, so that the point lever and the actual points themselves and the control valves are all proved to be in correspondence before a signal reading over the points can be cleared; any disturbance of this condition will restore the signal to danger immediately.

#### Track Circuiting

The layout is completely track circuited and there are 127 track indications in the new box. (Some track sections were in use while the old box was working.) Most of the track circuits are of the single-rail type but there are some double-rail on the steam lines outside the station area and in the platforms. All have isolating transformers, condenser feeds and double-element vane relays; nearly all the track relays are housed in the box, with some connections up to 300 yds. long, considerably reducing the number of repeater relays. In addition there are electric depression bars at selected places, supplementing the track circuit, where a minimum clearance is required or difficulty might be experienced in obtaining a reliable shunt at all times. At the far end of No. 5 platform, where conditions are especially unfavourable, axle counters have been installed in place of track circuit. The actuation of a bar cuts off the feed to the track circuit and short-circuits the rails.

#### Power Supply

A 400-volt, three-phase, four-wire supply obtained from the London Electricity Board is taken into the signalling sub-station adjacent to the signal-



The last set of main-line arrival signals, with route-indicators, at the approach to Euston



*Electro-pneumatic point layout at Euston*

box. A 400-volt, single-phase supply, from two outers of the three-phase service, is used for signalling purposes, being stepped up to 650 volts or down to 110 volts to suit requirements. An emergency standby diesel generating set is provided for feeding the signalling in the event of a failure of the incoming power supply. It is automatically started and is capable of taking over the load in 7 sec. The standby set control gear incorporates manual synchronising facilities, to enable the load to be transferred to the normal power supply after restoration of same without interrupting the signalling. Compressed air for the points is provided by two electrically driven compressors fed from the three-phase incoming supply. Each is capable of meeting full load requirements and either may be selected as the duty unit, with the other acting as a reserve. A standby diesel compressor set comes into service automatically on failure of the incoming power supply.

#### Cables and Wiring

The main signalling cables are of the multi-core oil-impregnated paper-insulated type, either lead covered and served or lead covered, armoured, and served, according to requirements. There are about eight miles of cable of various core constructions, but a standard range of 19, 27, 37, 48 and 61 cores has been adhered to. Some 80 miles of single core flameproof wire have been used in the signalbox with special rubber compound insulated type at apparatus cases and elsewhere outdoors.

It has been necessary to bring the work into service in stages and to facilitate this all points which were to be retained in the new layout were converted to electro-pneumatic operation and arranged to be worked temporarily from their levers in the old Nos. 2 and 3 boxes. A number of new connections was laid in and clipped, where this could be done without interfering with the existing working, in readiness for the alterations that could be made only when the No. 2 box had been closed and removed. As soon as the new signalbox was in work platforms 6 to 10 were closed to traffic, the old box was cleared away and the new lines

and platform extensions put in as rapidly as possible. The re-opening of these lines having been effected in two stages, platforms 3 and 4 were closed for similar work, and in two stages more the whole station was open for service again, the frame in the new box being then in full operation. These operations occupied approximately five weeks.

The power lever frame was originally provided by Westinghouse Brake & Signal Co. Ltd. in connection with an installation to be made at Preston which was not proceeded with. This firm's engineers were responsible for installing the point mechanisms, apparatus cases and track equipment, with all local cabling from the main run to the points and between apparatus cases and signals, also the wiring in the signalbox.

The signal gantry and cantilever structures were obtained from the Railway Signal Co. Ltd., and Henry Williams Limited, the remainder being constructed in the L.M.R. shops at Crewe. The colour-light signal units were manufactured by Metropolitan-

Vickers-GRS Limited, and the route indicators by the L.M.R. shops. All signals were erected by the London Midland Region.

All alterations and wiring in boxes other than the new box were carried out by London Midland Region staff.

The scheme was prepared and the work installed under the direction of Mr. S. Williams, Signal & Telecommunications Engineer, London Midland Region, to whom we are indebted for the information contained in this article and valuable assistance in the preparation of the text and diagram.

The new signalbox was brought into operation over the week-end of October 4 and 5, 1952.

#### Contractors

The principal contractor was:—

Westinghouse Brake & Signal Co. Ltd. Power lever frame; point mechanisms; power house electrical, air and switchboard equipment; all apparatus cases; transformers and track circuit equipment; large number of relays rectifiers for battery charging and feeding train describers and other auxiliary equipment; all air piping and accessories

Other contractors were:—

General Electric Co. Ltd.	Loudspeaker equipment
Siemens and General Electric Railway Signal Co. Ltd.	Train describers (except that for engine arrivals, provided by London Midland Region)
Metropolitan - Vickers - GRS Limited	Axle counters at platform 5 Signals
Railway Signal Co. Ltd.	Signal Structures
Henry Williams Limited	Multi-core cables
Crompton Parkinson Limited	Flameproof wire for signal-box
British Insulated Callender's Cables Limited	Diesel engines
W. T. Henley's Telegraph Works Co. Ltd.	Air compressors
Edison Swan Cables Limited	Switchgear for air compressors
Ruston & Hornsby Limited	Assistance in provision of apparatus panels mounted over the lever frame
Broom & Wade Limited	
Allen West & Co. Ltd.	
W. R. Sykes Interlocking Signal Co. Ltd.	



*Standby diesel generator set, air compressors, and switchboards for power supplies to the Euston signalling*



## New Locomotives for Sudan Railways

*Mixed traffic 2-8-2 type engines  
designed for burning oil fuel*

IN July, 1952, the North British Locomotive Co. Ltd. completed the first of an order for 19 locomotives for the Sudan Railways. These engines of the 2-8-2 type are designated "180" class. They will be used on all sections of the railway, and when operating on light track, the water in the tender will be reduced to keep the axleload within the stipulated maximum.

The locomotives were designed to the requirements of the Chief Mechanical Engineer, Sudan Railways and constructed in the builder's works under the supervision of the London office of the Sudan Government. The engines and tenders were shipped in the fully erected condition from Glasgow Docks to Port Sudan.

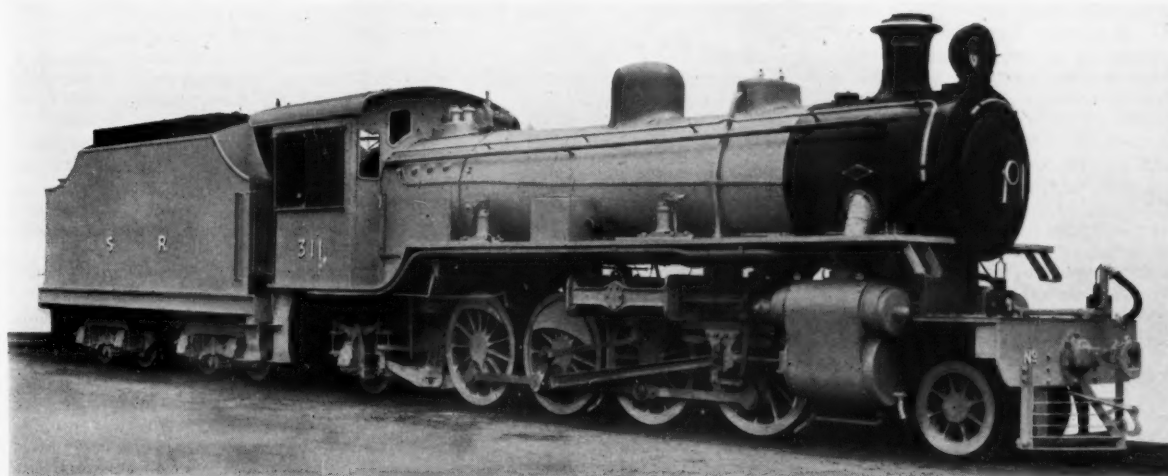
The boiler, which is identical with that of the railway's "220" class locomotives, has a barrel consisting of three rings the outside diameter at front and

rear being 4 ft. 6 in. and 4 ft. 10½ in. respectively. The longitudinal seams are treble riveted with inside and outside butt strips, and the circumferential joints double riveted. The distance between the tube plates is 14 ft. 5 in. There are 18 superheater flue tubes and 83 boiler tubes, 5½ in. and 2 in. outside diameter respectively.

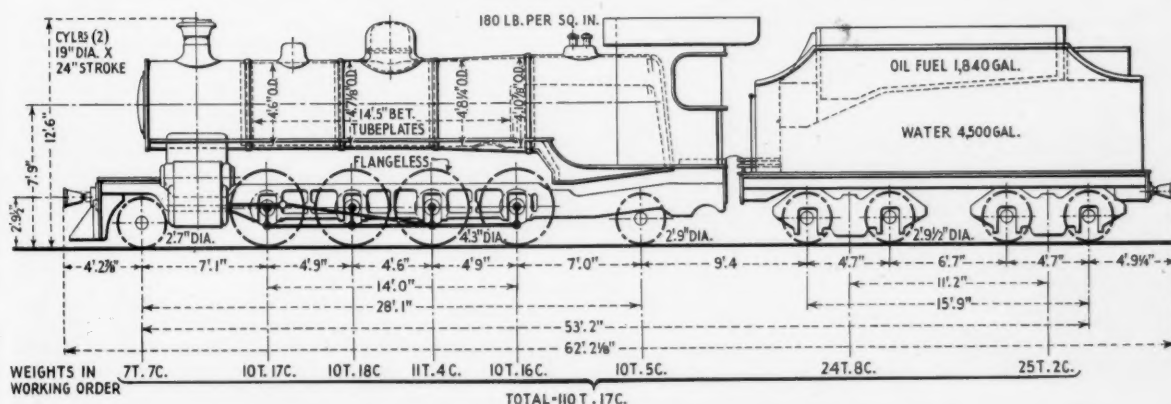
The inner firebox is of copper and stayed to the roof of the outer firebox by Longstrand steel stays. Water space stays of copper are fitted at the side, back and short combustion chamber. Laidlaw Drew oil fuel equipment is provided and includes burner, strainer, heating coil and sieve. The shallow firepan is completely lined with firebrick and there is an arrangement of tubes in the bottom plate providing a clockwise air flow. A Melesco superheater with 18 elements is fitted and the header is provided with an anti-vacuum valve;

a Joco regulator is fitted in the dome. The boiler and firebox is lagged with asbestos mattresses and covered with mild steel sheets secured by steel bands. Delivery of water to the boiler is by a Gresham & Craven No. 9 R.C.W. type injector and a Worthington-Simpson horizontal, duplex feed pump which delivers 1,850 gal. per hr. A Weir feed-water heater is also provided, and the top-feed to the boiler is by means of a Weir spraying valve. Other steam fittings include two 3-in. dia. Ross muffled pop safety valves and two sets of Klinger water gauges.

The main frames, in one continuous length, are cut from rolled-steel slabs and finished to a thickness of 4 in. and adequately stayed by cast-steel cross stretchers. Axlebox guides are cut from steel bar and fitted with manganese-steel liners. The coupled axleboxes are steel castings with gunmetal bushes and



*Mixed-traffic 2-8-2 engines designed for burning oil fuel*



*Diagram showing principal weights and dimensions of the locomotive*

keeps, and fitted with guide liners of manganese steel. Lubrication of the axleboxes is by means of a Wakefield 8-feed mechanical lubricator.

Laminated bearing springs are fitted to the coupled and trailing truck wheels, with coil bearing springs on the leading truck. Compensation is arranged in three groups, between leading truck and leading coupled, intermediate and driving, trailing coupled and trailing truck wheels.

The cylinders are of cast iron and fitted with renewable cast-iron liners. The cylinder barrels are lubricated by means of a Detroit 4-feed sight feed lubricator. The steam brake on the engine operates cast-iron blocks on the intermediate and trailing wheels and vacuum brake equipment is provided for the tender and train with one 21-in. dia. cylinder fitted on the tender.

Operation of the brake is by a Davies & Metcalfe ejector which has a combined Gresham & Craven steam brake valve.

Stone's electric lighting equipment is installed and includes a turbo-generator type "T.G.1," a 14-in. Tonum "E" headlight, and all necessary cab and gauge lights. Two 20-ton Sheward screw jacks are carried on the right-hand platform.

The tender is of a double four-wheel bogie type and carries 4,500 gal. of water and 1,840 gal. of oil fuel. The water and fuel tanks are of welded construction, but the internal stays are riveted to angles welded to the tank plates. The frame is built of longitudinal and cross channels of all-welded construction, with fabricated steel plate dragboxes at front and rear. The bogies are of the plate frame, spring beam type, and the axleboxes are of

cast iron with gunmetal bushes lined with whitmetal. A hand brake is provided. The following are the main particulars:—

Cylinders, dia. and stroke	19 in. x 24 in.
Coupled wheels, dia.	4 ft. 3 in.
Leading truck wheels, dia.	2 ft. 7 in.
Trailing truck wheels, dia.	2 ft. 9 in.
Engine coupled wheelbase	14 ft.
Engine total wheelbase	28 ft. 1 in.
Heating surface—	
Large tubes	356 sq. ft.
Small tubes	627 "
Firebox	142 "
Total	1,125 "
Superheater	260 "
Total	1,385 "
Grate area	26 "
Working pressure	180 lb. per sq. in.
Tank capacity	4,500 gals.
Fuel (oil)	1,840 "
Tender bogie wheels, dia.	2 ft. 9½ in.
Tender wheelbase, engine and tender	53 ft. 2 in.
Weight in working order—	
Engine	61 tons 7 cwt.
Tender	49 tons 10 cwt.
Engine and tender, total	110 tons 17 cwt.
Traction effort at 85 per cent working pressure	25,972 lb.

## Ultrasonics in the Foundry

### *Rectification of light-alloy castings and pattern plates*

**I**NCREASING use is being made of aluminium and light alloys for the making of pattern plates used in foundries for producing ferrous and non-ferrous castings. Where quantity production is required and pattern plates are in continuous use, they last indefinitely, and do not warp or deteriorate as is the case with wooden patterns. Pattern plates of this material are used in railway foundries for the moulding of brake blocks, and miscellaneous rolling stock fittings, which by virtue of the quantity required, are moulded on the batch principle depending on the capacity of the moulding machines employed.

It sometimes happens that aluminium and light-alloy castings have surface blow-holes or cracks, not detrimental to the castings themselves or their function, but which detract from their appearance. An efficient repair is claimed for the ultrasonic method recently introduced by Mullard Limited.

The method is not recommended for castings subject to stress. Lap- and butt-welded joints can be made in castings required for ornamental purposes; pattern plates can also be altered where designs have been modified.

The soldering iron is of the pistol pattern and has a chisel edge copper bit,

heated by means of a low voltage resistance winding of the conventional type, the necessary power is supplied from a transformer contained in the power unit. The iron for filling surface defects in castings is fitted with a tapered bit. The copper bit is secured to a magnetostriction transducer, which converts the electrical energy from the power unit into mechanical vibratory energy and vibrates the tip of the bit at extremely high frequency.

A trigger switch in the handle controls the supply of ultrasonic power to the bit. The heater element is controlled from the mains switch on the power unit. This unit contains the necessary valves and electronic circuits for providing the electronic power for the transducer, and has only a mains switch as an external control. Fuses are incorporated, and a multicore cable and plug connects the unit to the soldering iron.

### **Normal Soldering Technique**

No special technique is needed in the application of the soldering iron, which is allowed to reach the melting point of the solder used, and applied to the casting after being tinned with solder. Freshly tinned surfaces of aluminium do not require flux when joined to similar surfaces. If the tinning is left for any length of time, or joints are made with dissimilar metals, a non-acid flux is used to remove oxide formed on the solder. A tin/zinc solder of 80 to 20 per cent alloy is used.

The tinning bath is similar to the soldering iron in its electrical and mechanical construction. The power unit supplies power to the bath or soldering iron. Pre-heating is necessary if the casting is too large for the heating capacity of the iron.



*Rectifying surface faults on an aluminium-alloy water-cooling element by the ultrasonic process*

## RAILWAY NEWS SECTION

## PERSONAL

The Minister of Transport has appointed Mr. Owen L. Harries, who is a representative of shipping, to be a member of the Transport Users' Consultative Committee for Wales. Mr. Harries is Managing Director of Harries Bros. & Co. Ltd., Chairman of the Shipping Federation (Swansea District) and of the Employers' Clearing House, Swansea, and Swansea representative on the Council of the Chamber of Shipping.

The Minister of Transport has appointed Mr. W. W. F. Shepherd to be Chairman of the Transport Users' Consultative Committee for the North-Western Area. Mr. Shepherd is Chairman of Messrs. Turner & Newall Limited, Manchester, and a Director of Liverpool & London & Globe Insurance Co. Ltd., Royal Insurance Co. Ltd., and District Bank Limited.

Mr. A. J. Baker, Chief Mechanical Engineer, Southern Railway, India, has come to England on leave preparatory to retirement.

Dr. Hjalmar Schacht is reported to be about to study the construction of a railway linking Latakia Harbour with the interior at the invitation of the Government of Syria.

Mr. R. Postgate has been appointed an officer of the London Transport Executive with the title of Traffic Auditor.

Mr. S. Buchan, General Manager, Andre Rubber Co. Ltd., a subsidiary of Silenbloc Limited, has been appointed to the Board of the Andre Rubber Co. Ltd.

The long standing connection between Sir Robert Fryars as Chairman & Managing Director of A.C.V. Sales Limited and as Director of Associated Commercial Vehicles Limited, and other companies of the A.C.V. group, has been severed by mutual agreement. Mr. W. R. Black, Managing Director of Park Royal Vehicles Limited, has been appointed Chairman of A.C.V. Sales Limited.

Mr. Carl Mullerworth, Deputy Traffic Manager, Burma Railways, Mr. Kyung Mo Ahn, Chief Construction Engineer, Korean National Railways; and Mr. Byong Ho Chin, Director of Land Transportation for the South Korean government have been sent by their Government under the sponsorship of the United Nations on a tour of the Canadian National Railways, in the course of which they will study Canadian technical improvements applicable to their own railways.

Mr. J. Birkbeck, A.I.R.I., has been appointed Production Manager, Brynmawr Rubber Limited. Mr. Birkbeck was Founder Chairman of the Burton-on-Trent section of the International Rubber Institute.

Mr. Robert Flack, LL.M., who, as recorded in our December 5 issue, has been appointed Member of the Transport Tribunal for Northern Ireland until December 31, 1953, was born in Belfast and educated at the Royal Belfast Academical Institution. He received the degree of Master of Laws at the University of London, and was called to the English Bar at the Inner Temple. Mr. Flack obtained early experience in

We regret to record the death at Bulawayo, in October, of Mr. J. S. H. Grant. Mr. Grant was a former Vice-Chairman of Rhodesia Railways Limited. He joined the Railway Commission in Rhodesia as Secretary in 1929, and went to Bulawayo in that year. He acted as Commissioner on several occasions and assumed the chairmanship in 1940. He also served on various Government commissions, committees and boards. On the State acquisition of the Rhodesia Railways and the transfer in 1948 of the Board of Directors from London to Rhodesia, he was appointed a Director and acted as Chairman from January, 1948, to August, 1948. Mr. Grant was appointed Member and Vice-Chairman of the Railways Statutory Board under the 1949 legislation, a position from which he had retired. At the time of his death he was a trustee of the two Rhodesia Railways' Rhodesia Pension Funds. He was awarded the O.B.E. in 1946.

Mr. H. F. McKay has been appointed Purchasing Agent at Moncton for the Canadian National Railways. He was formerly Fuel Agent at Montreal.

Canadian National Railways announce the appointment of Mr. John Dawson as Fuel Agent. Mr. Dawson's headquarters will be in Montreal.

Mr. W. Grant, A.M.I.C.E., Assistant District Engineer, Kings Cross, has been appointed District Engineer, Ipswich. He began his railway career in August, 1921, in the District Engineer's Office at Darlington, transferring to the Nottingham District Engineer's Office in May, 1931, and to Kings Cross in April, 1936, and to the Area Engineer's Office in May, 1937. At the outbreak of war, Mr. Grant went with the other members of the Engineer's staff to H.Q.1 and later to Peterborough. In June, 1943, he became Assistant District Engineer, Boston, holding this position until February, 1949, when he was appointed Assistant District Engineer, Kings Cross.

Mr. E. S. Waddington, of Philips Electrical Limited (Industrial Group), has been appointed by the Sheet Metal Users' Technical Association as its representative on the British Standards Institution Technical Committee WEE/24—Projection Welding in Mild Steel. Mr. Waddington has also been re-elected Vice-Chairman of the B.E.A.M.A. Arc Welding Plant Section.

Mr. Wilfred H. Eames, aged 67, retired on November 30 from Thos. Cook & Son Limited, after 51 years' service.

Mr. W. Michael Perrin, Research Adviser to Imperial Chemical Industries Limited, has accepted an invitation to become Chairman of the Wellcome Foundation Limited. He will succeed Mr. H. E. Sier, who retires from the chairmanship at the end of January.



Mr. Robert Flack  
Appointed Member, Transport Tribunal  
for Northern Ireland

transport in various departments of the Midland Railway Northern Counties Committee in Belfast. He served with the Railway Construction Corps in France in 1917, and was appointed to the Finance Department of the Ministry of Transport in London in 1919. On leaving the Ministry in 1924, Mr. Flack joined the staff of Messrs. Deloitte, Plender, Griffiths & Co., Chartered Accountants, where he was mainly engaged on special work in connection with British and foreign railways. In 1931, Mr. Flack went to Buenos Aires to take up the appointment of Assistant to Chief Accountant, Central Argentine Railway, and he became Chief Accountant three years later. He was appointed Deputy General Manager & Legal Representative of the same railway system (retaining his post of Chief Accountant) in 1947. At the transfer of the British-owned railways in Argentina to the Argentine Government, Mr. Flack was appointed Chief Accountant of Ferrocarril Nacional, General Bartolome Mitre, from which position he retired on December 31, 1951.





*The late Mr. C. B. Byles*

Signal Engineer, New South Wales Government Railways, 1911-30



*Mr. L. C. Purkess*

Appointed Assistant to Commercial Superintendent (Passenger), London Midland Region



*The late Mr. W. B. Shelton*

Divisional Operating Superintendent, Crewe, London Midland Region, 1948-1952

Mr. C. B. Byles, whose death on November 19 was recorded briefly in our December 5 issue, was Signal Engineer, New South Wales Government Railways, from 1911-30. He entered Great Western Railway service in 1888, serving under Mr. James Blackall, the first Signal Engineer, and subsequently under Mr. A. T. Blackall, obtaining practical experience in the Signal Works at Reading, in the drawing office and on the line. He was placed in charge of the resignalling work in the West of England, consequent upon the conversion of the gauge from 7 ft. to standard in 1892. In 1897 he went to the Lancashire & Yorkshire Railway as Assistant to the then Signal Engineer, Mr. H. Raynar Wilson, who he succeeded as Signal Engineer in 1901. He remained with the Lancashire & Yorkshire Railway until 1911, during which period he was responsible for the signalling in connection with various widening works and the enlargement of Victoria Station, Manchester. In 1907-8, he was Lecturer in Railway Economics at the University of Liverpool, and in 1909 was appointed Lecturer in Railway Economics, University of Manchester. During 1909-10, he contributed several articles to *The Railway Gazette*, and at this period his book "First Principles of Railway Signalling" was published. In 1911 he was appointed Signal Engineer to the New South Wales Government Railways, and during the 20 years he was in office was responsible for many important developments. These included the complete reorganisation of the Signalling Department, the extensive introduction of power and automatic signalling in connection with the Sydney Underground Railway and electrification of suburban lines; also, installations in various other places within the State. The new signalling workshops at Chullora were also erected under his supervision. Mr. Byles was a Foundation Member of the Institution of Railway Signal Engineers, and a member of the Institution of Engineers (Aust.).

The American Car & Foundry Company announces the appointment of Mr. C. A. Walmsley as District Manager in charge of the St. Louis Car Plant of the A.C.F., succeeding Mr. T. G. Shipley, who has retired after more than 40 years of service.

Mr. L. C. Purkess, Assistant (Extra) Commercial Superintendent's Office, London Midland Region, who, as recorded in our November 21 issue, has been appointed Assistant to Commercial Superintendent (Passenger), was educated at Central Foundation School, London, and joined the L.N.W.R. in 1914. After station experience he entered the District Superintendent's Office, Euston in 1918, and was transferred to the General Superintendent's Office, Euston, four years later. He went to the General Superintendent's Office (Passenger Commercial) Derby in 1925, but returned to London in 1929 with the Road Transport Section of that department, where he was engaged in co-ordination of rail and road transport work and later in traffic court work in connection with passenger and goods road licences. He was appointed Deputy Chief Passenger Rates & Charges Clerk, Chief Commercial Manager's Office, in January, 1939, and was Chairman of the Passenger Train Rates & Fares Conference for 1944. He was also engaged on special duties in connection with the R.E.C. Passenger Committee. Mr. Purkess was appointed Assistant (Passenger Rates & Fares), Chief Commercial Manager's Office, Watford in 1946 and later became Assistant (Extra), Commercial Superintendent's Office, Euston, which post he has now vacated.

Mr. H. A. Mugliston, Assistant District Traffic Superintendent, Chester, London Midland Region, has been appointed Shipping Traffic Superintendent, Belfast, British Railways.

Mr. P. G. Price, Assistant District Goods Superintendent, Leeds, North Eastern Region, British Railways, has been appointed District Goods Superintendent, Bolton, London Midland Region.

Sir Robert Gould, C.B., who recently retired from the position of Chief Industrial Commissioner at the Ministry of Labour & National Service, has accepted an invitation to join the headquarters organisation of the British Electric Traction Co. Ltd. on January 1 next, with a view to appointment to the Boards of a number of the underlying companies.

Mr. W. B. Shelton, M.Inst.T., Divisional Operating Superintendent, Crewe, London Midland Region, who died on December 9 (not, as previously recorded, on October 9), joined the former L.N.W.R. as a probationer in 1915. He obtained experience at Queen's Park, Kilburn and Willesden until early in 1917, when he was commissioned in the Royal Flying Corps as an observer in kite balloons. After serving in Aden and Palestine, he returned to railway service in July, 1919, and in 1920 was appointed Runner to the District Superintendent, Manchester. At the end of 1921 he became Superintendent of the Line's Runner at Preston, and in 1925 was made Assistant District Controller, Heaton Norris. Four years later he was appointed Operating Assistant to the District Traffic Superintendent, Abergavenny. He became District Controller, Huddersfield, in 1931, and District Controller, Birmingham (New Street) in 1932. During 1938-39 Mr. Shelton served on a head-quarter's committee which inquired into district control organisation, he returned to Birmingham (New Street) in July of the latter year, and in March, 1940, was appointed temporarily to the position of District Controller, Willesden. In June, 1944, Mr. Shelton was appointed District Goods, Passenger & Docks Manager, Barrow, and in March, 1946, he became District Operating Manager, London (Western). Mr. Shelton was appointed Divisional Operating Manager, Crewe, in 1948, which post has been redesignated Divisional Operating Superintendent.

Mr. John Cartland, M.Sc., F.I.M., is retiring on December 31 from the boards of Fry's Metal Foundries, Ltd., and the Eyre Smelting Co. Ltd. He will continue to serve the companies as a consultant.

We regret to record the death, on December 12, of Mr. A. E. Osborn, Director & General Sales Manager of Dunlop Special Products Limited.

Mr. H. Cecil Booth, M.I.C.E., on December 3 received a gift of plate, together with an illuminated address, to mark his retirement from the office of Chairman of Goblin Electric Appliances.

## Peruvian Corporation Limited

*Increase in both traffic and revenue, but expenditure greater because of higher costs*

The sixty-second annual meeting of the Peruvian Corporation Limited was held on December 11 in London, Mr. W. H. White, Chairman, presiding.

In his statement circulated with the report the Chairman said that the gross revenue from the railways and steamers for the year under review (when converted into sterling at the rates mentioned in the accounts) amounted to £3,813,146 compared with £3,278,525 in the preceding year. Expenditure also advanced from £2,797,953 to £3,483,527, by reason of increases in salaries, wages, social legislation obligations and higher costs of materials. After making provision for a possible retroactive claim for a price increase in fuel oil in the year covered by the accounts, the net profit was £375,400 before charging debenture service. Since the publication of the accounts the abovementioned claim has been withdrawn, and the provision made therefore will accordingly not be required; it should therefore be added to the £375,400, which makes a total (after adjustment of exchange difference) of £494,663, compared with £514,420 in the previous year.

Two coupons on the Corporation's debentures (due April 1, 1946, and October 1, 1946) were paid on January 4, 1952, and June 16, 1952, respectively, and a further coupon (due April 1, 1947) was paid on December 1, 1952, leaving a balance of £399,518 of net revenue to be carried forward to meet debenture service, subject to the requirements of the business of the Corporation so permitting.

The total freight carried by the railways during the past year was 2,164,359 tons, against 2,072,403 tons in the previous year, showing an increase of 91,956 tons, while the number of passengers conveyed increased by some 91,646 from 3,404,570 to 3,496,216.

### Taxation

The subject of the obligations of the Corporation under the social laws of Peru has been mentioned more than once at previous meetings. These laws impose on the Corporation (among other obligations) the liability to pay on the retirement or death of every employee or workman in Peru a lump sum equal to one month's salary for every year of service of an employee and two week's wages for each year of service of a workman, and this sum is calculated on the basis of the salary or wage payable to the employee or workman at the time of his death or retirement. The English revenue authorities have maintained that only the actual amount paid by the Corporation in each year on account of this liability may be charged against profits for the purpose of U.K. income tax, while the Corporation, on the other hand, has contended throughout that it is entitled to charge the amount of liability which has accrued during each year, whether actually paid out or not.

The Board decided to take the matter to appeal and the hearing took place in July last before the Special Commissioners of Income Tax, when Dr. Hernando de Laval, who was in Europe at the time, gave evidence regarding the effect of Peruvian social laws. The Special Commissioners decided in favour of the Corporation's contention, but the Inland

Revenue has since formally stated its dissatisfaction with this decision and has requested the Special Commissioners to state a case for the opinion of the High Court. As the matter is still *sub judice*, the Chairman would not make any comments on the case.

For reasons which were given in a circular issued to the debenture holders on

October 28, 1952, the Board found itself unable to formulate a permanent scheme of arrangement. Consequently it proposed a scheme which extended the operation of the earlier ones for a further period of one year to December 31, 1953, with power to the Debenture Holders Committee to grant an extension to a date not later than December 31, 1955. The debenture holders passed the Scheme by the required majorities, namely, for 1,618 persons holding £1,495,300 debentures, and against 154 persons holding £254,700 debentures and accordingly a petition has been presented to the Court.

The report and accounts were adopted.

## Locomotive Engineers' Letchworth Visit

*Inspection of the foundry and engineering departments of K. & L. Steelfounders & Engineers Limited*

Members and guests of the Institution of Locomotive Engineers visited the works of K. & L. Steelfounders & Engineers Limited, Letchworth, on December 10. The party, totalling some 120, was welcomed by Mr. R. F. Ottignon, Foundry & Development Director. In apologising for the absence of Mr. F. W. Rowe, Managing Director, Mr. Ottignon said the party was the largest they had had the pleasure of entertaining, and he was sure they would be interested in many of the products which they would see being manufactured as they pertained to steam and diesel-electric locomotives for home and overseas railways.

Referring to future trends in the industry, he thought that it would not be long before they would be back in the competitive market. The firm's Research and Development Departments were continually reviewing production methods with the object of reducing costs. Railways had in recent years paid much attention to standardisation enabling improved production methods to be used in steel foundries, but he thought that much remained to be done. Mr. R. F. Harvey, Vice-President of the Institution of Locomotive Engineers, expressed appreciation for the reception accorded to the members. They had seen much of interest in the progressive methods used in all departments visited. Mr. W. H. Morton, General Sales Manager, replied suitably. Members were taken on a conducted tour of the various departments and were entertained to lunch and tea in the staff canteen. The following members and guests were present:—

Messrs. W. J. Ash; E. S. Aslett; G. W. Baker; J. G. Barber; H. Bayley; A. E. Beadle; F. H. Beasant; A. R. Bell; G. E. Best; W. C. Billing; C. I. Birkbeck; E. C. Bourne; H. E. Bristow; D. C. Brown; L. J. Brown; H. Burley.

Messrs. K. R. M. Cameron; C. H. Cardwell; J. Cave; H. Charnley; G. Clark; F. G. Clements; S. N. Cole; J. Cooper; K. A. Cox; B. Curl; R. Curl; A. C. C. Damant; P. C. Dewhurst; R. J. Drury; R. G. Duncan; A. G. Dunn; C. J. Eydmann; I. C. Forsyth; G. Foster.

Messrs. C. A. Gammon; D. F. Gifford; J. L. Gilbert; G. Gill; J. R. Grimdsell; D. Harsley; G. T. Hart; R. F. Harvey (Vice-President); M. A. Henstock; H. Holcroft; R. Horsfield; R. E. B. Hubble; H. W. Huggins; R. A. Hyde.

Messrs. G. E. R. Jarman; A. E. Jeffard; J. D. Johnson; S. P. Kay; W. G. Kefford;

W. Kelway-Bamber; H. L. Kelly; A. E. Kirton; W. S. Knight; E. A. Langridge; E. J. Larkin; J. P. Lloyd; M. D. Lowndes; E. P. Lumley.

Messrs. C. Macdonald; K. C. T. Marshall; E. W. Marten; E. J. Meadows; W. J. Mitchell; R. E. Nelson; S. Newman; E. A. Newsum; W. F. Noble; L. B. Norris; L. E. Nunn; W. R. Oaten; R. J. M. Payne; F. Pratt.

Lt-Colonel Raw; Messrs. W. G. W. Reid; H. E. Reynolds; F. Rich; G. M. Rickards; M. D. Robinson; C. F. Rose; S. Russell; S. D. Sanders; F. Sedcole; T. Schur; J. I. Scott; S. G. M. Shallard; R. Shenton; C. E. Simpson; T. F. B. Simpson; J. L. Smith; R. A. Smith; A. H. Sommer; W. Stewart; F. Strickland.

Messrs. A. R. Taylor; W. G. F. Thorley; C. L. Trask; A. W. Trow; E. L. L. Turnbull; F. Turner; T. H. Turner; J. F. B. Vidal (Vice-President).

Messrs. C. C. H. Wade; J. G. Want; S. H. Welsh; J. Whitehead; W. A. Whitson; R. G. Wickham; G. F. Wix; E. Woodbridge.

## Nyasaland Railways Headquarters

Sir Geoffrey Colby, Governor of Nyasaland, gave some points in favour of transferring the headquarters of Nyasaland Railways Limited from London to Nyasaland, when he opened the Legislative Council Session on December 1.

Sir Geoffrey said Nyasaland Railways Limited were under private ownership and subject to the direction of the Board in London. While this arrangement might have been satisfactory in the past, it was now out of date and Nyasaland should come into line with every other British territory in Africa. The headquarters of Nyasaland Railways should be transferred to Nyasaland and he had accordingly asked the Government and directors to put this proposal before the Board.

The Governor pointed out that while the headquarters of the railways remained in London, the company's profits were subject to British income tax. Had the company been exempt from both British and Nyasaland income tax last year it could have saved nearly £115,000 out of a total working profit of £280,000.

Nyasaland Railways Limited announced in a statement issued on December 8 that it had received no official confirmation of the proposal.

**Parliamentary Notes****Transport Bill Committee Stage**

On Clause 6 (B.T.C. vehicles to require licences but to be free from 25 mile limit) Mr. Ernest Davies (Enfield E.—Lab.), when discussion was resumed on December 10, moved an amendment to increase from three to twelve months the period during which the Commission could apply for licences for its goods vehicles. Three months, he said, was far too short for the Commission to apply for the many it would now need.

Mr. Alan Lennox-Boyd (Minister of Transport) said the Government was prepared to agree to double the period in question and an amendment would be introduced on the report stage.

After debate, Mr. Lennox-Boyd said the B.T.C. must redispense its fleet within the new period.

The amendment was negatived.

On the question that this clause stand part of the Bill, Mr. G. R. Mitchison (Kettering—Lab.) said it should be left to the B.T.C. to use its vehicles to stop gaps occasioned by the Bill and to do what it could to make an integrated road transport system.

Mr. Lennox-Boyd said the pattern of transport as it would develop would be more safely left in the hands of the licensing authorities. It had been said that the Commission, though subject to the licensing authorities, would be freed from the 25-mile limit. The Government was anxious at an early date, and the Bill enshrined the necessity, to dispense altogether, and they hoped for all time, with the 25-mile limit.

The guillotine fell, and Clause 6, with Clause 7, was ordered to stand part of the Bill.

The First Schedule (Rights of obtaining licences for five years for goods vehicles free of charge) was ordered to stand part of the Bill by 290 votes to 264.

**Granting of Licences**

On Clause 8 (Amendments as to grounds for granting or refusing licences), Mr. Ernest Davies, during discussion of an amendment, said that there was an effort to attack the operation of the licensing system, and if there was to be a change in that system it should not be introduced in a comprehensive Bill like this. With road passenger licensing there was to be investigation by an impartial committee. If the Minister intended to change the licensing system as to goods vehicles, an impartial committee should inquire into the situation first.

Mr. Lennox-Boyd said that the clause did not shift the emphasis regarding matters which licensing authorities were to have in mind from the needs of the public to the needs of transport, but from the providers to the users of transport. The Government's purpose was to secure more freedom in the issue of carriers' licences for road goods vehicles. An applicant had to show that some need existed, but under the Bill he had not now to disprove that existing facilities were adequate. Later, he stated that the Government was not making a profound change in the law. The people who needed public transport should have first consideration.

The amendment, which was to delete a subsection of the clause which amended part of the Road Traffic Act, 1933, relat-

ing to the exercise of discretion to grant or refuse applications for licences by the licensing authorities, was negatived by 280 votes to 255.

Clauses 8 and 9 were ordered to stand part of the Bill.

**Road Passenger Transport**

On Clause 16 (Road Passenger Transport) Mr. Percy Morris (Swansea W.—Lab.) moved an amendment to extend from one to 12 months the period within which the Commission must lodge applications for road service licences to cover activities provided by it at the passing of the Bill.

Mr. Gurney Braithwaite (Parliamentary Secretary to the Ministry of Transport) said that if Mr. Morris would put down another amendment on report extending the period to three months instead of twelve the Minister would accept it.

The amendment was, by leave, withdrawn.

Mr. Morrison (Lewisham S.—Lab.) moved an amendment to omit the provision prohibiting the B.T.C. from acquiring undertakings which consisted wholly or mainly of passenger road transport services, and without the consent of the Minister, from acquiring securities in similar undertakings which would bring them under the control of the Commission.

He said the clause provided for the smashing up of the economic and financial stability of the Commission in road passenger transport and made it get rid of public property on disadvantageous terms, not for the purpose of increasing the areas of the operation of large-scale private monopolies. Then, some day, somebody had got to buy the vehicles back again. When that day came people would be making a big mistake if they thought that the vehicles would be paid for twice.

Mr. D. T. Jones (The Hartlepool—Lab.) said that he suspected that Stratton House, Piccadilly, the headquarters of British Electric Traction Company, would tell the Minister when to put those securities on the market.

Mr. Lennox-Boyd said that the Government thought the B.T.C. already had an adequate interest in road passenger services. In 1948 the Commission acquired the remaining half interest in the Tilling group and bought out minority interests in some of the Tilling subsidiaries. At the end of the year their interest in road passenger services amounted to £31 million. It was now £50 million, and the B.T.C. had become substantial operators and owners.

Until the Thesiger Committee had reported he could make no further statement about his intentions on the permissive power he was taking in the Bill. But he could disabuse Mr. Morrison of any fear that they were going to give away these great assets.

The amendment was negatived by 284 votes to 264. Four minor amendments by the Government were agreed to, and Clause 16 as amended was ordered to stand part of the Bill by 282 votes to 262.

**Road Transport Levy**

On Clause 10 (Transport levy) Mr. Alfred Barnes (East Ham S.—Lab.), when the House again went into committee on December 11, moved one of a series of amendments to exclude certain classes of

vehicles from the levy. Even now, he said, some of the general traders did not realise that the tax would fall on "C" licence vehicles, vehicles used by local hauliers, and vehicles used for specialised traffics which were unaffected by the Transport Act, 1947. These three groups had to find a sum estimated at £20 million to pay for the anticipated loss on the disposal of the road haulage undertakings. It was inequitable that the motor transport industry should have to bear a further burden of £4 million a year so as to cover an act of Government policy. The Government was creating a dangerous precedent by transferring a Treasury liability to a group of citizens.

Mr. Alan Lennox-Boyd said it was hoped there would be a steady drift back to "A" and "B" licences. Some 340,000 vehicles of less than one ton unladen weight would not pay the levy at all. It had been suggested that the limit should be raised from one ton to 30 cwt. That would exempt 80,000 more vehicles. If the same revenue was to be derived it would demand an increase of 1s. a unit for those who had to pay. He was very sympathetic to the amendment, and would study the matter before the report stage.

The amendment was negatived.

The guillotine fell, and Clause 10 was ordered to stand by 273 votes to 262, as was the second schedule.

Clause 11 (Establishment of Transport Fund) was ordered to stand part of the Bill by 274 votes to 253.

On Clause 12 (Payments to B.T.C. out of Transport Fund for loss on disposal of the nationalised road haulage undertaking), Mr. Ernest Davies moved an amendment to substitute a provision that the Transport Tribunal determine the loss. He said the sum of £1,000,000 was far too small.

Mr. Maudling defended the Government's estimate of the loss. The profits of B.R.S., he said, would be substantially smaller this year.

The amendment was negatived.

Clause 12 was ordered to stand part of the Bill by 271 votes to 252.

**Reorganisation of Railways**

On Clause 14 (Reorganisation of railways), when discussion was resumed on December 15, Mr. A. F. Holt (Bolton W.—L.) moved an amendment providing that the scheme for reorganisation of the railways be submitted to the Minister within six months of the passing of the Act.

Mr. Arthur Woodburn (Clackmannan & E. Stirling—Lab.) said the Bill should remain inoperative as to Scotland pending an inquiry into transport co-ordination in Scotland.

Mr. J. Henderson Stewart (Under-Secretary, Scottish Office) said the Government could not accept such an inquiry as it would delay application of the Bill, which latter would give far more elbow-room to the Scottish railway authority.

The amendment was negatived.

**Abolition of Railway Executive**

Mr. Herbert Morrison moved deletion of the subsection abolishing the Railway Executive. If, he said, a passion for decentralisation as a dogma went so far that it frustrated economies and endangered the collective system of wage negotiation and



conditions of labour on a national basis, that would be going too far. The Government scheme did not give a better chance of co-ordination. All the decentralisation required could be obtained within the existing legislation.

Sir Ralph Glyn (Abingdon—C.) said the Commission must be left alone to submit its scheme. Interference by Parliament until the Minister had considered the scheme would only delay it. The Railway Executive could cease to exist if the Minister appointed enough whole-time practical men to the Commission. The B.T.C. must be paramount in all negotiations on labour policy. Financial control at the centre must be absolute, and it was necessary to recognise that in the Regions the steel rail or macadam road were the same. If they decentralised down to that he was certain that good must come from the Bill.

Mr. P. Morris (Swansea E.—Lab.) said that if any other body was to take the place of the Railway Executive it should have authority as well as responsibility.

#### Minister's Assurance

Mr. Lennox-Boyd said nobody suggested that public ownership of the railways should be disturbed, or that the main-line railways should be restored as they were in 1947. The B.T.C. had several times, formally and informally, asked him to bring the Executive to an end. Lord Hurcomb had asked him to read a letter written by the Deputy Chairman about this matter, because on that aspect there was not the same measure of agreement.

In advance of the production of a scheme the Railway Executive had to come to an end, if not to be abolished beforehand. Abolish was an unfortunate word, because it carried with it an ungenerous connotation; he wished there was a better one. Everyone agreed the scheme should be drawn up by experts, but the Government believed that they should lay down the broad outline of the framework they wanted and then ask the Commission to draw up its scheme, which would have to come before Parliament; he would listen to arguments about the procedure to be adopted to deal with it when it did.

The Railway Executive, Mr. Lennox-Boyd went on, had been appointed not by the Commission but by the Minister. One cause of friction, despite the good personal relations, had sprung from the fact that the Minister had appointed not only the Commission but the Members of all of the Executives. In addition, all the full-time Members of the Railway Executive had a functional responsibility, but shared a corporate responsibility.

#### Difficulty of Dual Control

Strong central control was not necessarily the right set-up for the future. In the old days the lines of authority had been clearly known. It had been the duty of the general manager to see that the particular sectional interests of one officer were subordinated to the wider interests of the railway as a whole. That had been discarded in the Act of 1947. The functional line had been substituted. Each Member of the Executive had become a departmental manager issuing orders down the departmental line. At each of the headquarters to which he had been, the dualism of control had been the thing on which people talking to him had largely concentrated. The clause has been drawn to give wider latitude to the Commission.

Mr. Lennox-Boyd then read the letter written by the Deputy Chairman of the B.T.C., Mr. John Benstead, in which

it was said that Lord Hurcomb had pointed out to the Minister that while the B.T.C. was in full sympathy with the general reorganisation of the Railway Executive in a way which would avoid the imposition of a separate statutory Executive between the Commission and the railway Areas, it was essential that the Commission have undisputed control over the personnel and the functioning of the various parts of the undertaking.

The letter then went on to state that if it was the Government intention to retain in the Bill some provisions on the lines of Clauses 14 and 15, the Commission had prepared two clauses which they felt more adequately covered their point of view. The purpose of those clauses was to limit the matters which might be the subject of the scheme, and while retaining for the Minister reasonable powers of modification and alteration, prevented the Commission having imposed on it a scheme altogether different from that which it submitted to the Minister.

The suggested new clauses, Mr. Lennox-Boyd added, would have prevented effective decentralisation, and the emphasis was continually on the retention of strong central control to a degree to which the Government agreed might have been inevitable at the start of unification, but was no longer tolerable.

#### Conditions of Employment

He was glad to give an unqualified assurance that the B.T.C. had no intention of proposing—and he had no intention of permitting—anything in the reorganisation scheme which would upset the arrangements in the 1947 Act for the negotiations on conditions of railway employment on a national basis. A wide measure of discretion had been left to the Commission in the reorganisation scheme it was to submit, and it might well be that the Commission would recommend a co-ordinating authority to deal with such matters, on a national basis.

There was no intention of using the powers provided in the clause to amend the section of the 1947 Act which provided the negotiating machinery. The reason the powers were in the clause was because there was a large number of old railway Acts, one of which might in some provision require some minor amendment for the purpose of the reorganisation scheme.

Freedom for the railways, said Mr. Lennox-Boyd, must include freedom as to the way in which and the extent to which they decided to decentralise the control of charges. They might wish to experiment to a limited extent on the decentralisation of rate control. They might think it necessary to do so in Scotland and elsewhere in a limited field at first.

#### Reason for Fuel Inquiry

Mr. P. H. Collick (Birkenhead—Lab.) said that if there had been friction between the Railway Executive and the Commission, that was all the more reason for a full inquiry. The Railway Executive was to be abolished and only the Chairman of the B.T.C. and perhaps one or two others would be full-time Members.

Mr. Ralph Assheton (Blackburn West—C.) said that whatever happened to the Hotels Executive, railway catering should be returned to railway management.

#### Docks and Harbours

Mr. Ralph Morley (Southampton, Itchen—Lab.) urged that the docks and harbours should remain under the control of the Docks & Inland Waterways Executive, which had managed them very well.

Mr. Lennox-Boyd said it was the Government intention that the docks and harbours should be administered separately from the railways but under the B.T.C.

Mr. Geoffrey Wilson (Truro—C.) said that if some organisation were required between the Regions and the Commission it might be possible to have something like the old General Managers' Conference.

#### Talks with T.U.C.

Mr. Ernest Davies said it was certain the Minister had not consulted the railway union representatives before deciding on the abolition of the Railway Executive.

Mr. Lennox-Boyd said that within a week of being appointed Minister he wrote to the T.U.C. asking it to consult with him on the terms of the Bill. Only the White Paper had been produced then. He kept the invitation open. It was true that he had had three fruitful meetings lately, but that was after the publication of the Bill containing the proposals concerning the Executive. He would have liked the consultations to have taken place much sooner.

The amendment was negated by 275 votes to 252.

The Government accepted an amendment, moved by Mr. Hylton-Foster (York—C.) to limit the power of the Minister strictly to the amendment of statutory provisions necessary for the purpose of the scheme. If the clause was not amended, he said, the Minister was being given power to alter statutes almost *ad lib.*

Clause 14, as amended, was ordered to stand part of the Bill by 282 votes to 258; Clause 15 by 279 votes to 254; and Clause 17 by 277 votes to 251.

## Staff & Labour Matters

### Trade Unions and Denationalisation of Road Transport

After considering the invitation of the Minister of Transport to nominate a trade union member to serve on the Disposals Board for B.R.S. vehicles, the T.U.C. has declined the offer.

A statement issued after a meeting at the House of Commons on December 12 said: "The Minister of Transport and representatives of the General Council of the T.U.C. held a further meeting today at which various points arising out of the Transport Bill were discussed. The T.U.C. representatives also informed the Minister that they were unable to accept his suggestion that a representative of organised labour should sit on the Road Haulage Disposal Board."

### Road Haulage Employees' Threat of Strike Action

B.R.S. employees at a meeting in London on December 13 decided to adopt "complete national strike action" on January 19 unless the Government postpones the Transport Bill until after the General Election or drops it completely. About 250 men attended the meeting and it was claimed that they represented about 9,700 workers at B.R.S. depots.

Mr. Arthur Deakin, General Secretary of T.G.W.U., had issued a warning to union members that the meeting was unofficial. He urged the men to have nothing to do with this movement for industrial action on a political issue.

The resolution demanding strike action also proposed the election of a national shop stewards' committee and added that a direct appeal should be made to "all workers in nationalised industries for support in the action we have decided."

## An Unusual Reconstruction at Frankfurt

The four slightly curved tracks of the German Federal Railways leading from Frankfurt South Station to Frankfurt East run for some distance on an embankment which, because of the proximity of buildings, is flanked by retaining walls. In 1912, when an underbridge was built for the Darmstadt highway, the level of the embankment was raised by about 16 ft., and the original retaining walls were taken up to the new level without reinforcement of their cross-section. In time, the retaining wall on the concave (south) side of the curved embankment showed signs of deterioration for a distance of 164 ft. and it became necessary in 1951 to renew this section of the retaining wall. This appeared to be particularly difficult as the railway boundary left a margin of no more than 20 in. outside the existing retaining wall.

Originally, tenders were invited for the construction of a curtain of steel sheet piling to be driven along the line of the southernmost track (Frankfurt South to Frankfurt East) which could be taken out of service for 2½ months. The sheet piling was to be tied to the retaining wall on the opposite (north) side, thus neutralising the pressure of the earth towards the south. Contractors were at liberty to suggest other solutions, and one, proposed by Messrs. Grün and Bilfinger, was adopted. Their proposal was based on the fact that, during the temporary removal of the southernmost track, the three other tracks could be adequately supported by the existing retaining wall, as long as the natural sloping angle of the embankment was maintained. It was therefore decided:

(a) to reduce the height of the existing wall by about 11 ft.;

(b) to remove the outer part of the old masonry down to some distance below ground level;

(c) to strengthen the existing wall, from that level upwards, by means of a concrete apron 31½ in. thick leaning against the old wall and supported by a row of reinforced concrete piles;

(d) to use this apron as a support for a reinforced concrete slab, intended to carry the southernmost track;

(e) to create a further support for this slab by driving another row of reinforced concrete piles on the inside of the retaining wall.

The piles in the front row are about 18 ft. long and inclined at 8 to 1 against the wall; those of the rear row are about 32 ft. long and are inclined at 20 to 1 in alternate directions; they are spaced at intervals of 1 ft. 7 in. Slab and apron are rigidly connected; the space below the slab has been left open for inspection purposes and may be reached through a special manhole. With this design, the new structure is required to absorb only the forces from the southernmost track.

The construction work was preceded by the laying of new crossovers which reduced the section of single-line working to a minimum. The silos and mixer for cement and aggregate were installed on railway-owned land on the opposite side of the road underbridge; the concrete was taken across the bridge on narrow-gauge tip wagons using the strip normally occupied by the southernmost track.

The short period of possession (2½ months) called for uninterrupted day and night work, including Sundays. After the removal of the track, the old retaining wall was stripped down to the prescribed level,

and the rear row of piles was driven. The opportunity was taken to drill a series of tubular drainage wells between these piles. The piles consist of steel tubes, filled with spiral-reinforced concrete, compacted by means of inside vibrators. These works had to be carried out at a distance of about 12-13 ft. from the adjacent track which, during this period, carried a traffic of 182 scheduled movements, during 24 hours.

Meanwhile, the front lining of the old retaining wall was stripped down to the

prescribed level some distance below ground, and the front piles were driven, section by section. The new concrete apron itself was built in five sections, separated by special expansion joints. Steel forms were used for the visible surfaces. The work could be completed within the stipulated time limit. Compared with a conventional retaining wall of the gravity type, the volumes of spoil and concrete were only slightly more than one-third.

## Conveyance of an Outsize Load by the Ulster Transport Authority

A Hufford stretch-wrap forming machine, valued at £100,000 and weighing 75 tons, arrived in Belfast on October 13 from California, and was transferred by 100-ton floating crane to an Ulster Transport Authority 24-wheel low-loading trailer for delivery to Newtownards, a distance of 15 miles.

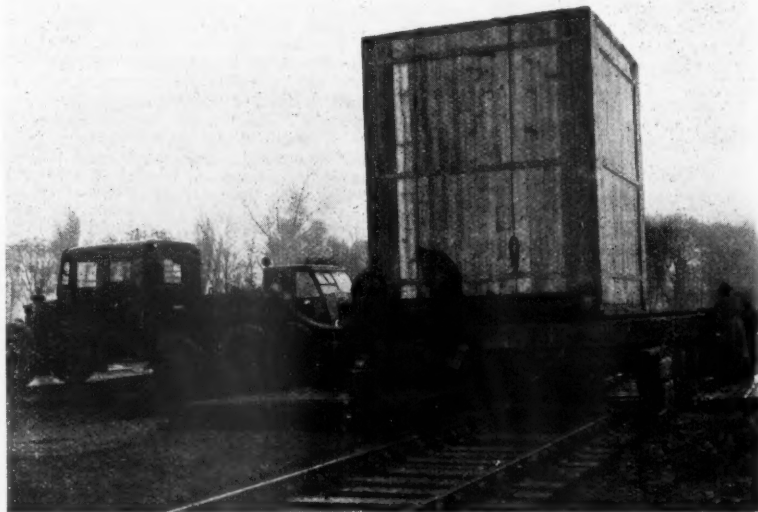
The machine was packed in a wooden crate, measuring 15 ft. 5 in. × 13 ft. 5 in. × 16 ft. 4 in., and when standing on the road trailer was 19 ft. 7 in. high. By reason of its height it was unable to pass under overhead wires in Belfast, and a route had therefore to be planned which would avoid as many of these obstructions as possible. As some were unavoidable, the major part of the journey had to be carried out at night, to cause minimum inconvenience to electrical consumers during power cuts. Apart from these difficulties, night movement was also necessary to avoid interference with general road traffic.

The first stage was the short journey accomplished in daylight on November 22 from the quayside to a special siding adjacent to Victoria Park Halt on the Belfast-Bangor line, where it was transferred on to a 100-ton wagon lent by Harland & Wolff Limited to the U.T.A. Thence it was conveyed by rail on to a second special siding on the Belfast side of

Sydenham Station; the short journey by rail was carried out at night to avoid the dislocation of passenger services. In daylight on November 23 the machine was transferred to the road trailer once more, before its final journey by road to Newtownards, which began at 11.40 p.m. that day.

For the transfer from road to rail and back again, special ramps were constructed with railway sleepers at both temporary sidings, so that the platform of the road trailer was level with that of the railway wagon. The crate was jacked up, two greased rails were placed underneath, and the case was slid across, using the combined power of the two road tractors. The transfer from road to rail for this short section of the journey was necessary as a reinforced concrete bridge spanning the Connswater River was considered unsafe to carry the weight of this load. Alongside, however, this bridge was a railway bridge capable of carrying the load, but with trough girders unsuitable for road vehicles.

On the road journey one six-wheel Scammell tractor hauled the loaded trailer, and one four-wheel Foden tractor operated at the rear of the trailer. Two Leyland Hippo six-wheel lorries carried the equipment for loading and unloading, and could have been used for extra tractive power



Crate containing 75-ton machine being transferred from road trailer to wagon at Victoria Park Halt, near Belfast

or extra braking power when descending steep hills. Negotiations in connection with the haulage of this machine began in April. Since then considerable planning and operating arrangements were necessary in order to ensure safe arrival.

## Freight Service Improvements on the Pennsylvania Railroad

The Pennsylvania Railroad is to undertake a programme of freight improvements costing some \$47,000,000. It will permit faster freight schedules, give increased capacity, and bring savings to the Pennsylvania Railroad through greater efficiency in operations and in wagon repairs. The project, which will be financed from the company's resources, includes a large new freight yard; the largest and most modern wagon repair shop in the country; new icing stations for perishable freight; new facilities for handling livestock in transit; a new salvage and scrap plant; changes in freight routes, and improved signalling in the areas affected. It will take three years to complete and will involve extensive improvements and new facilities in western and central Pennsylvania, eastern Ohio, and Jersey City.

The largest single item will be new freight classification yards and installations for servicing through freight trains at Conway, 22 miles west of Pittsburgh. It will more than triple the classification capacity of the present yard at Conway and by means of the most modern arrangement and mechanisation of facilities will speed up operations in the whole Pittsburgh area. The new yard, one of the largest on the system, will make possible the re-routing over easier gradients and the speedier movement of much east-west freight, with widespread freight service improvement not only in the Pittsburgh area but generally over the system. The schedules of many freight train runs will be cut from two to twelve hours, with special benefit to freight moving in both directions between St. Louis, Cincinnati, Columbus and the east. Including changes to track and signalling in nearby Ohio and around Pittsburgh, to make its benefits fully effective, it will cost approximately \$34,000,000.

What will be the largest and most modern wagon repair shop in the country will be erected at Hollidaysburg, eight miles south of Altoona, at a cost of approximately \$12,000,000. It will be operated as a part of the company's Altoona Works, and will be known as the Samuel Rea Shop, after the ninth President of the Pennsylvania Railroad. It will turn out a total of fifty repaired wagons a day.

A new icing station will be provided by the Fruit Growers Express Company at Conway Yard, and new icing facilities by the railway at Jersey City. Facilities of the most modern type for feeding and resting livestock in transit will be provided at Conway, replacing older accommodation at Pittsburgh. Ninety wagonloads of stock will be accommodated at one time, assuring consignors of livestock of improved services, with savings to the railway.

The company's reclamation and scrap plant at Conway will be removed to Hollidaysburg, clearing a large area for expanding freight operations at Conway and achieving substantial savings in handling and hauling costs by siting the reclamation work adjacent to related activities at the new shop.

The new Conway Yard will be  $3\frac{1}{2}$  miles long and 85 tracks wide at the centre. Built

to provide for normal traffic growth over many years ahead, it will classify up to 8,000 wagons each day on two "humps" equipped with automatic braking to control wagon movement and speed, as well as automatic scales to weigh the wagons in motion. Little of the present yard facilities will be retained except part of the engine house, which will be adapted to serve both diesel and steam locomotives. The yard will be larger than Enola, near Harrisburg, at present the busiest on the Pennsylvania. The engineering design for Conway is nearly complete, but construction will require about three years.

Preliminary work on the new Samuel Rea wagon repair shop at Hollidaysburg has begun and is expected to be completed about the middle of 1954. The shop will be  $\frac{1}{2}$ -mile long, 54 ft. high, and vary in width from 180 to 270 ft. It will have three repair lines running the length of the building. As wagons move in to one end of the plant, worn and damaged parts will be scrapped or repaired for re-use. Wagons will be repaired progressively, sandblasted, painted and dried by modern infra-red lamps in the concluding operation. Wagons entering the shop in the morning will be ready for service again the same day.

## Contracts & Tenders

The Sudan Government has placed a contract with the Metropolitan-Cammell Carriage & Wagon Co. Ltd. for 200 bogie covered goods wagons.

British Railways, Western Region, announce that the following contracts have been placed:—

A. Estcourt & Sons, Gloucester. Resurfacing with concrete the goods shed platform at Stroud.

Titan Lift Co. Ltd., N.W.1: Supply and erection of one electrically-driven 1-ton trolley hoist at the coal stage, St. Blazey.

Caffin & Co. Ltd., W.C.2: Removal and reconstruction of dolphins and other works to the pontoon landing stage at Dartmouth Station.

Fairfield Shipbuilding & Engineering Co. Ltd., Chepstow: Supply of steelwork and pre-cast pre-stressed concrete deck units for the reconstruction of the bridge under the line at Ide, near Exeter.

Bennett Bros. (Contractors) Ltd., Swansea: Extension of the signalbox and the provision of a relay house at Pembrey.

Jewell & Son, Barnstaple: Carrying out works in connection with permanent way maintenance in the Bridgwater Section of the Taunton District.

The Special Register Information Service of the Board of Trade has reported a call for tenders issued by the Directorate General of Supplies & Disposals, Government of India, for:

270 gauges, duplex, vacuum, for steam locomotives and for driving end of electric suburban stock

517 gauges, single, vacuum for brake vans

232 gauges, duplex, vacuum, with brass casting

Tenders should reach the office of the Directorate General of Supplies & Disposals, New Delhi, by 4 p.m. on Wednesday, January 21. A copy of the tender documents is available for inspection at the Board of Trade, Commercial Relations & Exports Department, by representatives of United Kingdom manufacturers.

The First Secretary (Economic) at the British Embassy, Belgrade, has notified the

Board of Trade, Commercial Relations & Exports Department, of an enquiry by Intercont, on behalf of the Rankovicevo organisation for the supply of the following items:—

5,024 Isothermos axleboxes  
5,164 enclosed buffers  
2,710 fully-reinforced screw-couplings  
2,790 draw hooks  
1,030 volute springs  
1,030 sets of brake equipment, Hikgr 12 in. complete  
1,030 sets of brake equipment, Hikpbr 12 in. complete  
8,240 individual brake shoe holders  
4,120 supporting springs

All the above items are to German Federal Railway standard specifications.

Interested manufacturers should at once indicate their interest direct to Intercont, P.O. Box 197, Belgrade, Yugoslavia, without waiting until they have prepared quotations. A copy of the specifications (in German) is available for inspection at the Board of Trade by representatives of interested United Kingdom manufacturers. A further copy is available on loan in order of written application. Reference CRE/40564/52 should be quoted.

## Notes and News

**Assistant Engineer (Mechanical) Required.** Applications are invited for the post of assistant engineer, mechanical, required for the London Office of the Crown Agents for the Colonies. See Official Notices on page 699.

**London Midland Region Christmas Traffic Plans.**—The London Midland Region will run 726 extra main line expresses during the Christmas holidays. On Christmas Eve 248 extra trains will be run, and for returning holidaymakers there will be 162 extra trains on Sunday, December 28.

**Eastern Region Christmas Traffic Arrangements.**—During the Christmas holiday period 348 additional main line trains will be run in the Eastern Region. A Sunday service, with certain adjustments, will operate on Christmas Day and Boxing Day. The greatest number of extra services will be on Christmas Eve (119).

**Vacancies for Senior Assistant Traffic Superintendents.**—Applications are invited for the posts of senior assistant traffic superintendents required by the Government of the Federation of Malaya for the Railway Department for a tour of three years with prospect of pensionable employment. See Official Notices on page 699.

**Institution of Civil Engineers: Christmas Lectures for Boys.**—The Christmas lectures for boys at the Institution of Civil Engineers this year cover aviation. They will be as follows: Friday, December 19, "Aerodromes for Civilian Jet Aircraft," by Mr. W. G. M. Anderson; Monday, December 22, "The 'Comet' in Passenger Service," by Mr. A. C. Ponsford; and Monday, December 29, "Testing a Jet Transport," by Mr. Peter Bois. The lectures, which begin at 3 p.m., will be illustrated by films and slides. Tickets, free of charge, can be obtained from the Secretary, Institution of Civil Engineers, Great George Street, S.W.1.

**Extra Christmas Services in the Western Region.**—The Western Region will run more than 280 special long-distance trains



during the Christmas holiday. Of these, 178 will be additional trains between Paddington and the West of England, South Wales and the Midlands; cross-country services will be augmented by 106 extra trains.

**North Stafford Hotel, Stoke-on-Trent.**—The Hotels Executive states that no date has been fixed for transfer of the North Stafford Hotel, Stoke-on-Trent; it was announced in our issue of December 5 that the hotel had been sold to Frederick Hotels Limited and that transfer would take place on January 1, 1953.

**Moerdijk Bridge to be Renewed.**—Moerdijk Bridge, which spans the Hollands Deep between Dordrecht and the province of North Brabant and carries the Rotterdam-Antwerp main line, is to be renewed. The bridge was badly damaged during the war and was only temporarily restored, to carry a single line. The new bridge will be double track.

**"Ladies Only" Restaurant Car Trains.**—After discussion with leaders of women's organisations, the North Eastern Region is to run 85 special restaurant car trains in 1953 for women only. These will be Spring and early summer day trips from the North East to various destinations, such as London, Oxford, Birmingham (for the Shakespeare country), King's Lynn (for Sandringham), Windermere, Holyhead, Edinburgh, Arrochar, and Ayr. The inclusive charge will include rail fare, meals in the train, and motorcoach and steamer trips. Specimen charges are: Newcastle to Loch Lomond, 54s., including steamer trip on Loch Lomond, and Middlesbrough to Northern Ireland (Larne, Giant's Causeway, Portrush), 92s. 3d., including steamer, motorcoach trip, supper on outward journey, breakfast and lunch in Ireland, and supper on return rail journey.

**Canadian Pacific Railway Dividend.**—At a meeting of directors of the Canadian Pacific Railway in Montreal on December 8, a final dividend of 75 cents per share on the ordinary capital stock and of 2 per

cent on the preference stock was declared in respect of 1952.

**United of Havana Capital Reorganisation Scheme Sanctioned.**—The capital reorganisation scheme of the United Railways of the Havana & Regla Warehouses, Limited, has been sanctioned by the Court. Shareholders and stockholders approved the scheme in November. The scheme was outlined in our October 24 issue. It is proposed to make the provisions operative on December 30.

**A Klingerit Ring Cutting Machine.**—A joint-cutting machine has recently been put into production by Richard Klinger Limited. Designed on somewhat similar lines to the machines installed at the company's works, it has a capacity from 2 in. to 48 in. diameter and is suitable for cutting Klingerit 1,000, Klinger-Oilit, Klinger-Acidit and R.K. joint-rings. A steel tape is attached to the machine marked in centimetres and inches for setting to the sizes required. The machine is 14 lb. in weight and it is claimed that a Klingerit joint ring 24 in. dia. by  $\frac{1}{8}$  in. thick can be cut in less than 20 seconds. The machine is also suitable for cutting cardboard, rubber, cork and similar materials. The overall length is 42 in., length of bed 36 in., height 10½ in. Full details are given in leaflet J21-22 obtainable from the maker.

**Crompton Parkinson Limited: Record Production and Sales.**—The statement by Mr. Albert Parkinson, Chairman of Crompton Parkinson Limited, on the year ended June 30, 1952, records increases in production costs and in competition in overseas markets though production and sales figures were records. The range of raw materials and finished products, he stated, for which there had been a change from a sellers' market to a buyers' market, had widened. This had affected the demand for some of their products, partly by creation of an atmosphere of hesitancy amongst buyers. Most of their products had continued in strong demand and customers' requirements were still in excess of productive capacity. The rise of nearly £220,000 to £1,660,040 in the surplus from

trading was considered satisfactory by the Directors. The proposal for the same distribution as last year, namely a final dividend of 3½ per cent and a special cash bonus at the same rate, was approved at the annual general meeting on December 12.

**Dedication of Window Representing Paddington Station.**—On December 11 the Bishop of London dedicated a new window at St. James's, Sussex Place, the Parish Church of Paddington, whose vicars have been honorary chaplains to Paddington Sta-



Stained glass window at St. James's Church, Paddington, depicting Paddington Station

tions for more than a century. The window, shown in the accompanying illustration, was designed by Mr. Arthur Buss, and replaces one blown out in an air raid. It shows an express about to leave Paddington Station for the West. Those who were present at the dedication included Mr. K. W. C. Grand, Chief Regional Officer, Western Region, and Mrs. Grand; Messrs. C. Furber, Commercial Superintendent; Gilbert Matthews, Operating Superintendent; M. G. R. Smith, Chief Engineer; and R. Burgoyne, Regional Staff Officer, Western Region; and Mr. G. E. Orton, Public Relations Officer, Road Haulage Executive.

**East Kent Road Car Co. Ltd.**—After deducting £127,000 for taxation, compared with £53,500 last year, net profit of the East Kent Road Car Co. Ltd., for the year to September 30 at £98,485 showed a decrease of £55,021. A final dividend and bonus, both at 10 per cent maintain the same distribution of 25 per cent as in the previous year.

**Bridge Broken by Flood: Narrow Escape for Railcar.**—Floods recently demolished the centre pier of a steel bridge between Evian and Thonon, French National Railways, but the track remained suspended across the gap, sagging sufficiently to break the electrical circuit which brought a signal 600 yd. from the bridge to danger. The driver of a railcar from Evian passed the signal dead slow, in accordance with regulations, and braked when he realised

### Inspection of Whitemoor Marshalling Yard



In the control room during a recent visit. Left to right: Messrs. C. K. Bird, E. W. Rostern, S. E. Parkhouse, and (on right) John Elliot

## OFFICIAL NOTICES

## CROWN AGENTS FOR THE COLONIES

## CROWN AGENTS FOR THE COLONIES

The engagement of persons answering Situations Vacant advertisements must be made through a Local Office of the Ministry of Labour or a Scheduled Employment Agency if the applicant is a man aged 18-64 inclusive or a woman aged 18-59 inclusive unless he or she, or the employment, is exempted from the provisions of the Notification of Vacancies Order, 1952.

**IMPORTANT** wagon builder desires Sales Engineer for Belgian Plant. Work to consist of estimating costs, preparing detailed technical quotations, doing sales work both written and by personal contact. Spanish and French languages useful. Technical training essential. Preference given to man willing to travel. Excellent future for man with right combination of sales and technical abilities. Minimum age 25, maximum depending on experience but preferably not over 45. Excellent salary depending on qualifications. Reply Box 679. *The Railway Gazette*, 33, Tothill Street, London, S.W.1.

**THE "PAGET" LOCOMOTIVE.** Hitherto unpublished details of Sir Cecil Paget's heroic experiments. Eight single-acting cylinders with rotary valves. An application of the principles of the Williams central-valve engine to the steam locomotive. By James Clayton, M.B.E., M.I.Mech.E. Reprinted from *The Railway Gazette*, November 2, 1945. Price 2s. Post free 2s. 3d. *The Railway Gazette*, 33, Tothill Street, London, S.W.1.

**INTERNATIONAL RAILWAY ASSOCIATIONS.** Notes on the work of the various associations concerned with International traffic, principally on the European Continent. 2s. By post 2s. 2d. *The Railway Gazette*, 33, Tothill Street, London, S.W.1.

**N.E.R. HISTORY.**—Twenty-Five Years of the North Eastern Railway, 1898-1922. By R. Bell, C.B.E., Assistant General Manager. N.E.R. and L.N.E.R. Companies, 1922-1943. Full cloth. Cr. 8vo. 87 pages. 10s. 6d.—*The Railway Gazette*, 33, Tothill Street, London, S.W.1.

what had happened, but not soon enough to prevent the railcar from pitching down the embankment, where it came precariously to rest some yards above the swollen stream. Nobody was injured.

**Road Haulage Executive Chairman's Christmas Message.**—Mr. G. N. Russell, Chairman of the Road Haulage Executive, has issued the following message to the staff: "Once again I am sending you on behalf of the Executive and myself our Christmas message. Thank you all for the loyal support and hard work that you have put in during the past year. Your zeal and sense of duty have been highly commendable. We are entitled to feel proud of the organisation that we have built up during the past five years and which is now providing an efficient, reliable national transport service. It is difficult to foresee what the New Year holds in store, but I ask you all to continue to carry out your respective tasks with that high degree of efficiency that ensures to trade and industry that service upon which they and the country rely. A very happy Christmas to you all and the best of luck in the New Year."

**Tube Investments Limited.**—At a meeting on November 5 the Directors of Tube Investments Limited decided to recommend at the annual general meeting on December 10 a final dividend on the ordinary stock of 7½ per cent actual, and an adjusting dividend of ½ per cent actual. With the interim dividend of 13½ per cent paid before the recent capitalisation of reserves, this recommendation makes a rate for the year ended July 31, 1952, equivalent to 15 per cent on the capital as increased by the recent capitalisation of reserves. Trading profits (after depreciation) for 1952 were £9,056,595, compared with £7,431,189 a year ago. About £1 million of the increase in profits is of an exceptional nature and represents a realisation of the appreciation

**ASSISTANT ENGINEER (MECHANICAL)** required for the London Office. Salary scale £575 × 25 — £750 × 30 — £900 a year. The £575 minimum is linked to entry at age 25 and is subject to increase at the rate of one increment for each year above that age up to but not exceeding age 34. Fully qualified officers of at least 27 years of age who have completed at least 2 years' satisfactory service are eligible, under certain conditions, for a special increase in salary of £75. Pay Addition to basic salary payable at the rate of 10% on first £500 and 5% on second £500. Extra duty allowance of 8% on basic annual salary plus Pay Addition also payable at present. Engagement will be on unestablished terms with a prospect, after satisfactory service, of appointment to the established and pensionable staff in due course, vacancies permitting. **Qualifications.**—Candidates between 25 and 35 years of age should have passed the qualifying examination for Associate Membership of the Institution of Mechanical Engineers, or equivalent examination. They should also have served an apprenticeship or pupillage in the Locomotive or Rolling Stock Department of the British Railways, or with a firm of locomotive or rolling stock builders, or with a firm specialising in the manufacture of wharf or breakdown cranes. They should also have subsequent drawing office experience in the design of locomotives or carriages and wagons and diesel railcars or cranes, together with a sound knowledge of modern workshop practice. Duties include preparation of contract specifications, examining and approving drawings, design calculations, and technical correspondence. Apply at once by letter, stating age, full names in block letters, and full particulars of qualifications and experience, and mentioning this paper to the—CROWN AGENTS FOR THE COLONIES, 4, Millbank, London, S.W.1, quoting on letter M.29209B. The Crown Agents cannot undertake to acknowledge all applications and will communicate only with applicants selected for further consideration.

**BOUND VOLUMES.**—We can arrange for readers' copies to be bound in full cloth at a charge of 25s. per volume, post free. Send your copies to the SUBSCRIPTION DEPARTMENT, Tothill Press Limited, 33, Tothill Street, London, S.W.1.

**SENIOR ASSISTANT TRAFFIC SUPERINTENDENTS** required by the Government of the Federation of Malaya for the Railway Department for a tour of three years with prospect of pensionable employment. Salary (including allowances) payable in local currency equivalent at present Government rate of exchange to £1,218 a year rising to £2,100 a year for single men. Additional allowance up to £630 a year payable to married men according to dependents. Commencing salary according to age, war service and experience. Free passages. Liberal leave on full salary. Candidates should have served as special apprentices with a Railway and have had considerable subsequent experience in Traffic Operating and Commercial Work, with a sound knowledge of modern railway rating practice. To be eligible for the above salary candidates should be Associate Members of the Institute of Transport or hold equivalent professional or academic qualifications. Those not so qualified would be eligible for a salary in a somewhat lower scale, i.e., equivalent to £1,197 a year rising to £1,862 a year, exclusive of dependents' allowance. Apply at once by letter, stating age, full names in block letters, and full particulars of qualifications and experience, and mentioning this paper to the—CROWN AGENTS FOR THE COLONIES, 4, Millbank, London, S.W.1, quoting on letter M.27696.E. Applicants serving with British Railways would be eligible for secondment and should forward their application through their local officers. The Crown Agents cannot undertake to acknowledge all applications and will communicate only with applicants selected for further consideration.

**TRANSPORT ADMINISTRATION IN TROPICAL DEPENDENCIES.** By George V. O. Bulkeley, C.B.E., M.I.Mech.E. With chapters on Finance, Accounting and Statistical Methods. In collaboration with Ernest J. Smith, F.C.I.S., formerly Chief Accountant, Nigerian Government Railway. 190 pages Medium 8vo. Full cloth. Price 20s. By post 20s. 6d. *The Railway Gazette*, 33, Tothill Street, London, S.W.1.

in the value of stocks following two increases in steel prices during the year. Figures are subject to final audit. The board also resolved that the following dividends be paid: On both the 7 per cent cumulative first preference stock and the 4½ per cent redeemable cumulative preference stock, the dividends at the authorised rates for the half year ending November 30, 1952.

**International Union of Railways Anniversary Lunch.**—The French National Railways gave a lunch to the International Union of Railways in Paris on November 19 to celebrate the thirtieth anniversary of the Union. Among those present, and shown in the accompanying illustration from left to right, were:

M. Armand, General Manager, French National Railways; Mrs. John Elliot; M.

Tissier, Chairman, French National Railways; Mme. Dorges; Mr. John Elliot, Chairman, the Railway Executive; Mme. Armand; MM. G. di Raimondo, General Manager, Italian State Railways; F. Q. den Hollander, Chairman, Netherlands Railways; Chargueaud-Hartmann, Manager, Transport Division, Economic Commission for Europe; F. Delory, Vice-Chairman, I.U.R.; and Mme. Tuja.

**Wakefield Works of Vickers-Armstrongs Limited.**—Vickers-Armstrongs Limited, announces that it has acquired the sole right to manufacture and sell the equipment previously supplied by Hyland Limited of Wakefield. This includes an extensive range of hand- and power-operated hydraulic steering gears for ships, deck machinery, such as cargo winches, capstans, and windlasses, all of which have been sold by the company in Great Britain



A group taken at the International Union of Railways anniversary lunch

and throughout the world during the last 29 years. In February, 1952, Vickers-Armstrongs Limited announced that it had purchased the works and plant of Hyland Limited at Wakefield. The Wakefield Works of Vickers-Armstrongs Limited, as they are now to be known, will continue to be used for the manufacture of the complete range of Hyland products and, in addition, for the expansion of Vickers variable speed gear production.

**Improved Welding Electrode for Manganese Steel.**—The Quasi-Arc Co. Ltd. has entirely redesigned its Manganoid electrode, which has been in use for many years for the welding of 12/14 per cent. austenitic manganese steel. Manganoid (new type) electrodes are fully extruded and are particularly easy to use with both d.c. and a.c. supplies. They are recommended for the reinforcement of manganese steel, excavator buckets, digger teeth, rock crusher jaws, and manganese steel railway points and crossings. A crack-resisting weld metal is deposited which work hardens rapidly to provide maximum resistance to wear, impact and abrasion.

**Freight Traffic to and from Trieste.**—The tariff agreement referred to in our November 14 issue and due to take effect from April 1, 1953, which provides for routing of Czechoslovak and Hungarian traffic passing through Trieste via Austria and Italy rather than by the shorter route through Yugoslav territory, has been strongly criticised in Yugoslavia. There is dissatisfaction also because American aid to Austria and Austrian exports are being routed between Trieste and Austrian stations via the Austro-Italian frontier station of Tarvisio, avoiding Yugoslavia. The direct route between Vienna and Trieste, the old Südbahn of the Austro-Hungarian Empire, traverses what is now Yugoslav territory.

**Mullard Equipment Factory Expansion.**—To cater for the increased commercial activities of the Mullard Equipment Division, Mullard Equipment Limited has recently acquired another factory at Wandsworth in Garratt Lane, London, S.W.18. All engineering development facilities and centralised workshop areas are now being concentrated in the older factory at Brathway Road. At Garratt Lane are housed the main assembly and production lines for all classes of equipment, as well as factory administration and service departments. Research and advanced development will continue to be done at the Mullard Research Laboratories at Salfords, Surrey.

### Forthcoming Meetings

January 2, 1953 (Fri.).—The Railway Club, at 57, Fetter Lane, E.C.4., at 7 p.m. "The West Highland Railway in North British Days," by Mr. H. A. Vallance.

January 2 (Fri.).—Institution of Mechanical Engineers, Storey's Gate, St. James's Park, S.W.1, at 5.30. "Principles and Practice Governing Interchangeability and the Specification of Manufacturing Limits of Size as Influenced by Statistical Considerations," by Captain G. C. Adams.

January 6 (Tue.).—Railway Service Christian Union, in the London Midland Region Clerical Dining Club Hall, Cardington Street, Euston, N.W.1, at 6.15 p.m. New Year's Rally. Speaker: Mr. J. Taylor Thompson.

## Railway Stock Market

Holiday influences have reduced business in stock markets to a modest level, and at the time of going to press values in most sections are easing as a result. Sentiment is also affected by the view that the pending big Anglo-Iranian oil debenture offer will be followed by other important industrial issues, which would compete with existing securities and lead to selling of the latter.

British Funds accordingly have eased with the general trend. There has been a little disappointment that the Commonwealth Conference has not resulted in more definite decisions. The latter perhaps could hardly be expected while there is so much uncertainty as to the policy of the new Government of U.S.A. In many quarters it is expected that there will be another Commonwealth Conference after the Coronation, when American Government policy will have taken shape. In the City there are fears that markets may not show any marked increase in activity until just before the Budget, which, it is hoped, may bring some reduction in the tax burden. Meanwhile, investors may tend to prefer British Funds to industrial shares because of the difficulty of judging the trade outlook.

Foreign rails may continue to display individual features of strength, as important developments affecting some companies are expected next year. This prospect meanwhile will tend to attract much speculative activity in the market.

The main emphasis has been on Manila Railway issues. The 4 per cent "A" debentures are changing hands around 81, and the 3½ per cent "B" debentures up to 70½. The 1s. ordinary shares have been dealt in up to 4s. and the £1 non-cumulative preference shares up to 10s. The market expects that arrears of interest on the debentures will be cleared next year. Moreover, if the Manila Railroad repaid its bonds held by the Manila Railway Company, the latter would almost certainly go into liquidation. In that event, it is assumed that holders not only of the debentures but also of the preference and ordinary shares would get back much more than the current market prices. Hence the strong speculative attention which is developing in these shares, though it remains to be seen whether market hopes will be realised.

Interest in Costa Rica issues has been maintained with business around 8½ in the ordinary stock, at 58 in the first debentures and around 44 in the second debentures. A feature has been a sharp rise to 20s. in Nitrate Rails shares on latest break-up estimates.

United of Havana stocks have shown firmness, awaiting developments, with the 5 per cent 1906 debentures at 18½, the 4½ per cent Cuban debentures 42, and the 4½ per cent Cuban debentures 20½. Havana Terminal debentures were 72.

Antofagasta ordinary stock was 10½, and the preference stock 51. San Paulo 6s. 8d. units changed hands at under 7s. and Taitai shares were 15s.

White Pass & Yukon, though still active, have been easier at \$17½ with the convertible debentures at £66. Canadian Pacific changed hands around \$59½, while the 4 per cent preference stock was £64 and the 4 per cent debentures £79½.

Engineering shares have been inclined to strengthen, buyers coming in because of the favourable yields in some cases and general expectations that dividends will be maintained. A problem which may face engineering companies towards the end of 1953 is whether to buy back their nationalised steel assets. In some cases this would necessitate the raising of additional capital, but both Vickers and Cammell Laird have retained the steel stock issued as compensation, and they would probably not have to raise more money to re-acquire their important interest in the English Steel Corporation.

The shares of locomotive builders and engineers are closing the year with a steady tendency. Beyer Peacock are 31s. 3d., which compares with highest and lowest levels of 32s. 6d. and 27s. 1952. Hurst Nelson, which were up to 56s. 10½d. and down to 43s. 6d. in the year, are now around 43s. 9d. During 1952 North British Locomotive have moved between 17s. 6d. and 13s. 6d. and are also ending the year around the lowest level in 1952. Highest and lowest for Gloucester Wagon 10s. shares were 14s. 3d. and 10s. 9d. and the current price is 11s. 9d. Charles Roberts 5s. shares (extremes 23s. 6d. and 18s. 4½d.) are now 21s. 4½d. and Wagon Repairs 5s. shares, now at 13s., are at their best level, compared with the lowest point during the year of 10s. 3d.

Traffic Table of Overseas and Foreign Railways

Railway	Miles open	Week, or month ended	Traffics for week		No. of week	Aggregate traffics to date	
			This year	Inc. or dec. compared with 1950/51		Total 1951/52	Increase or decrease
South & Cen. America	Antofagasta ...	800	5.12.52	£186,910 + £24,620	49	£7,653,280 + £1,574,420	
	Costa Rica ...	281	Oct., 1952	£1,296,769 + £52,714	18	£5,360,796 + £413,494	
	Dorada ...	70	Oct., 1952	36,865 - 29	44	345,133 - 15,987	
	Inter. Ctl. Amer. ...	794	Oct., 1952	\$1,040,283 + \$44,639	43	\$10,837,325 - \$124,807	
	Paraguay Cent. ...	274	5.12.52	G759,109 + G365,359	23	G14,039,955 + G6,281,942	
	Peru Corp. ...	1,050	Nov., 1952	S8,312,000 + \$410,000	22	\$46,259,000 + \$5,459,000	
	" (Bolivian Section)	66	Nov., 1952	Bs.16,210,000 + Bs.124,000	22	Bs.82,290,000 + Bs.6,485,000	
	Salvador ...	100	Sep., 1952	¢87,000 - ¢28,000	13	¢363,000 - ¢18,000	
	Taitai ...	122	Nov., 1952	\$2,884,000 + \$707,000	22	\$14,528,000 + \$4,408,000	
Canada	Canadian National†	23,473	Oct., 1952	19,865,000 + 1,137,000	44	187,052,000 + 14,910,000	
	Canadian Pacific†	17,037	Oct., 1952	13,352,000 - 115,000	44	126,435,000 + 7,968,000	
Various	Barsi Light* ...	167	Oct., 1952	33,915 + 10,245	31	223,890 - 15,382	
	Gold Coast ...	536	Oct., 1952	344,976 + 56,940	29	2,032,983 + 284,912	
	Mid. of W. Australia ...	277	Sep., 1952	59,145 - 3,363	13	164,704 - 11,525	
	South Africa ...	13,398	15.11.52	2,012,536 - 35,323	36	64,488,775 + 1,892,934	
	Victoria ...	4,744	Aug., 1952	2,442,385 + 510,468	9	-	

\* Receipts are calculated at 1s. 6d. to the rupee

† Calculated at \$3 to £1